INSTRUMENT
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# INSTRUCTION MANUAL

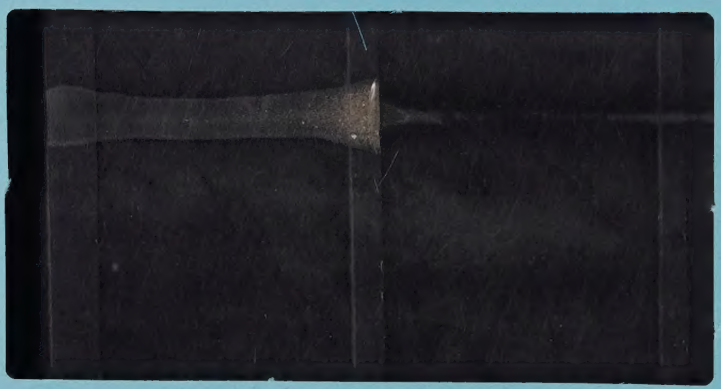
## REGULATED POWER SUPPLIES

MODEL LM
E PACKAGE

THIS MANUAL APPLIES TO UNITS
BEARING SERIAL NO. PREFIXES A-C

LAMBDA

LAMBDA ELECTRONICS CORP.–MELVILLE, L. I., N. Y.



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This manual provides instructions intended for the operation of Lambda power supplies, and is not to be reproduced without the written consent of Lambda Electronics Corp.

LAMBDA ELECTRONICS CORP. MELVILLE, L.I., N.Y.

MAIN PLANT TELEPHONE: 516 MYrtle 4-4200

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# SPECIFICATIONS AND FEATURES

The following specifications apply for all Lambda E package LM power supplies. Specification exceptions noted here relate to models incorporating model option "Y" and/or "T". Performance specifications do not change for models with suffix "R", e.g., LM-E2-R unless the models also include model options "Y" and/or "T" e.g., LM-E2-YR; for these models the appropriate specification exceptions also apply.

NOTE: Specifications in italics apply only for Lambda models with a "Y" suffix, e.g., LM-E2-Y. AC INPUT specification with an asterisk*, applies only for Lambda models with a "V" or "T" suffix, e.g., LM-E2-YT.

DC OUTPUT--Voltage regulated for line and load

Voltage Range.... For voltage range see table I of pertinent model group.

Multi-Current Ratings.... Current ratings specified for each maximum ambient temperature apply over entire output voltage range, with input frequency 55-65 cps. For input frequencies 45-55 at 105-132 VAC, 200-250 VAC, or 205-265 VAC, delete 40°C rating.

For input frequencies 360-440 cps, consult factory for current ratings.

For maximum current ratings at each ambient temperature see table I of pertinent model group.

REGULATED VOLTAGE OUTPUT

Regulation (line)... Less than 0.05 percent plus 4.0 millivolts for input variations from 105-132 or 132-105 volts AC

*... Less than 0.01 percent plus 1.0 millivolt for input variations from 105-132 or 132-105 volts AC*

Regulation (load)... Less than 0.03 percent plus 3.0 millivolts for load variations from 0 to full load or full load to 0

*... Less than 0.02 percent plus 2.0 millivolts for load variations from 0 to full load or full load to 0*

Remote Programming

External Resistor... Nominal 200 ohms/volt output

Programming Voltage... One-to-one voltage change

Ripple and Noise... One millivolt rms; 3 millivolts peak-to-peak with 60 cps input

*... 0.5 millivolt rms; 1.5 millivolts peak-to-peak with 60 cps input*
*... 1.0 millivolt rms; 10 millivolts peak-to-peak with 400 cps input*

Temperature Coefficient... Change in output voltage less than *0.03%/°C*

*... Change in output voltage less than 0.01%/°C*

AC INPUT--105-132 volts AC at 45-440 cps; 450 watts+

+ With output loaded to full 40°C rating and input voltage 132 volts at 55-65 cps.

*...200-250 volts AC at 45-440 cps ("T" option)

*...205-265 volts AC at 45-440 cps or 187-242 volts AC at 45-440 cps ( "V" option )

INPUT FUSE--"SLO-BLO" fuse F1 protects the AC input circuit. Overload of the supply does not cause fuse failure.

"SLO-BLO" fuse F2 protects the load from excessive output current that can be caused by internal circuit failure.

For fuse ratings see table I of pertinent model group.

OVERLOAD PROTECTION

Thermal.... Thermostat resets automatically when overtemperature condition is eliminated

Electrical... Within rated voltage range, an automatic electronic current-limiting circuit limits output current to approximately 110 percent of 40°C rated current for protection of load and power supply; for overloads approaching short circuit, both voltage and current decrease until at short circuit, current is reduced to a safe value, except for models LME-0-7, 0-14, 0-32 and 0-60, where output current remains limited to 110 percent of 40°C rated current at 40°C ambient.

OVERSHOOT--No overshoot of output voltage under conditions of power turn-on, power turn-off, or power failure.

INPUT AND OUTPUT CONNECTIONS--Heavy duty terminal block on rear of chassis

OPERATING AMBIENT TEMPERATURE RANGE AND DUTY CYCLE--Continuous duty from -20°C to 71°C ambient with corresponding load current ratings for all modes of operation, and all mounting positions.

STORAGE TEMPERATURE-- -55°C to +85°C

CONTROLS

DC output control... Voltage adjust control permits adjustment of DC output voltage via access hole located in nameplate.

REMOTE SENSING--Provision is made for remote sensing to eliminate effect of power output lead resistance on DC regulation.

PHYSICAL DATA

Size ..... 4-15/16" H x 7-1/2" W x 11-7/8" D

Weight..... 28 lbs. net; 31 lbs. shipping wt.

Finish ..... Grey, FED STD 595 No. 26081

MOUNTING--Three surfaces, each with tapped mounting holes, can be utilized for mounting this unit. Unit must be mounted so that radiator fins are always vertical. Refer to figure 9 for mounting details.

ACCESSORIES

Rack Adapters... Rack adapters LRA-4 and LRA-6, used for ruggedized mounting, with or without chassis slides, are available, as well as rack adapters LRA-3 and LRA-5 which are used for simple rack installations where chassis slides are not required.

Metered and Non-Metered Panels... Metered panels MP-3, MP-5, and Non-Metered panels P-3, P-5 are available for use with the Lambda rack adapters.

Blank Panels... Full-rack, half-rack and quarter-rack panels can be used with the Lambda rack adapters. The following chart lists the panels and rack adapters that can be utilized together.

| Rack Adapter | BLANK PANELS | | | Metered/Non Metered Panel |
|---|---|---|---|---|
| | 1/2 Rack | 1/4 Rack | Full Rack | |
| LRA 3 | LBP-20 | LBP-10 | LBP-40 | MP-5, P-5 |
| LRA 6 | LBP-20 | LBP-10 | LBP-40 | MP-5, P-5 |
| LRA 4 | LBP-50 | LBP-60 | LBP-30 | MP-3, P-3 |
| LRA 5 | LBP-50 | LBP-60 | LBP-30 | MP-3, P-3 |

Overvoltage Protector... Externally mounted, Overvoltage Protectors LMOV-1, LMOV-2 and LMOV-3 are available for use with Lambda LM power supplies.

MODEL OPTIONS

Suffix "T" Input Option... Standard LM power supplies are available for operation with 200-250 volt, 45-440 cps input.

Suffix "Y" High Performance Option... All Lambda LM power supplies are available with high performance specifications. See italicized entries under SPECIFICATIONS AND FEATURES.

Suffix "R" Fungus Proofing Option... Standard LM power supplies can be obtained with fungus proofing treatment with MIL V 173 varnish for all fungi nutrient components.

Suffix "V" Input Option... Standard LM power supplies are available for operation with 205-265 volt, 45-440 cps input or 187-242 volt, 45-440 cps input. See nameplate for AC input rating. See schematic diagram for rewiring of AC input.

Suffix "S" Option... Standard LM power supplies are available for use with Lambda Systems Power Sequencer or Systems Power Protector. All fixed voltage power supplies must be specified with the "S" option when used with the Systems Power Sequencer.

# THEORY OF OPERATION

## GENERAL

The Lambda power supply consists of an AC input circuit and transformer; a bias supply consisting of an auxiliary rectifier, filter, and a zener diode regulator; and a main regulator circuit consisting of the main rectifier and filter, a series regulator, emitter follower drivers, an error amplifier, a current limit amplifier, an output voltage sensing circuit and an output current sensing circuit. In addition, certain models also contain a voltage amplifier circuit.

The circuit arrangement is shown in block diagram form in figure 7. The circuitry is discussed with reference to the block diagram and the schematic diagram.

## FUNCTIONAL DESCRIPTION

Single phase input power is applied to transformer T1 through the input circuit containing thermostat S1, which protects the supply against overheating.

The main rectifier, a full-wave rectifier, provides the power which is filtered by capacitors C18, C19 and then regulated via a series regulator and delivered to the output. Bias supply, half-wave, auxiliary rectifier CR7, provides voltage filtered by capacitor C7 and regulated by zener diode CR6 for current limit amplifier Q3 and error amplifier Q1, Q2 (or, as applicable, for voltage amplifier Q2). Zener diode CR1 and resistor R5, across the bias supply, provide a regulated temperature compensated reference voltage. Resistor R4 compensates for input voltage variations.

Operation of the voltage regulator circuit is determined by changes in the output voltage. A change in the output voltage is sensed by the sensing divider resistors which compare output voltage with the +S reference voltage. This provides an error voltage at junction of R2 and R3 (or, as applicable, R1 and R3), which is amplified by error amplifier Q1 and Q2 and is current amplified by drivers Q5, Q6 (and, as applicable by Q8, Q9). The amplified signal from the drivers controls the voltage across series regulator Q8-Q12 (or, as applicable, Q8-Q13 or Q10-Q13), which functions as the active regulating element, restoring output voltage to the proper level.

*Current limit circuit operation is determined by changes in the load. Current limit amplifier Q3 samples load current through current sensing resistor R25A (or, as applicable R25). When the voltage drop across this resistor increases compared with the preset voltage reference determined by R17 and R18, Q3 conducts. Thus, when the output current rating of the unit is exceeded, current limit amplifier Q3 conducts, decreasing the current through drivers Q5, Q6, (and, as applicable by Q8, Q9), resulting in an increase of voltage across the series regulator and a decrease of the output voltage, effectively limiting the output current to a safe value. The current limit value is determined by the factory setting of current limit potentiometer R17.

When operating conditions approach short circuit, the output voltage decreases. Since the voltage determined by R17 and R18 is proportional to the output voltage, when the output voltage decreases, Q3 is biased into turn-on at lower and lower load currents until output voltage decreases to zero and current decreases to a predetermined low value.

*The following theory only applies for units with voltage amplifier Q2.

Current limit circuit operation is determined by changes in the load. When load current increases above the rated current value, the voltage drop across current limit potentiometer R17 increases, turning on current limit amplifier Q3. With Q3 conducting, the current to driver Q5 decreases, limiting the base current to series regulator Q8-Q13, which results in an increase of voltage across the series regulator and a decrease of the output voltage, effectively limiting the output current to a safe value. The current limit value is determined by the factory setting of current limit potentiometer R17.

When operating conditions reach short circuit, the output voltage value decreases to zero and the current decreases to a predetermined current limit value and remains unchanged.

## BASIC MODE OF OPERATION

This power supply operates as a constant voltage source provided the load current does not exceed the rated value at 40°C. For continuous operation, load current must not exceed the rating for each ambient temperature. *When load current exceeds 110% of 40°C rating, both voltage and current decrease until voltage reaches zero and the current at short circuit equals approximately 30 percent or less of the rated current.

*For models LME-07, LME-0-14, LME-0-32, and LME-0-60 output current remains limited to 110% of 40°C current rating.

## MOUNTING

When using this unit as a mounted component, a cutout must be provided to permit free-flow of air through the unit. See figure 9 for cutout sizes and specific mounting details.

## CONNECTIONS FOR OPERATION

NOTE: Make all connections to the unit before applying AC input power.

Ground Connections. The Lambda power supply can be operated either with negative or positive output terminal grounded. Both positive and negative ground connections are shown in the diagrams for all suggested output connections illustrated in this manual.

Connection Terminals. Make all connections to the supply at the terminal block on the rear of the supply. Apply input power to terminals 1 and 2; always connect the ungrounded (hot) lead to terminal 1.

The supply positive terminal is brought out to terminal 6; the negative terminal to terminal 4.

NOTE: When shipped from the factory, the supply is ready for use as a local-sensing constant voltage source. Jumpers are connected at the factory as shown in figure 3. Take care to remove the appropriate jumpers for load requirements that need different supply-load connections. Refer to the appropriate connection diagram.

Supply-Load Connections. The regulation of the supply at the load may change when connecting leads of practical length are used. To minimize the effect of the output load leads, remote sensing is used. Refer to figure 1 to determine voltage drop for particular cable lengths, wire size and current conditions. Lead lengths must be measured from supply terminals to load terminals as shown in figure 2.

Local-Sensing Connection, See Figure 3.

Remote-Sensing Connection, See Figure 4.

Programmed Voltage Connection Using External Resistor, See Figure 5. Discrete voltage steps can be programmed with a resistance voltage divider valued at nominal 200 ohms/volt output and a shorting-type switch. For continuous voltage variations, use a variable resistor with the same ohms/volt ratio in place of the voltage divider and shorting-type switch. Use low temperature coefficient resistor(s) to assure most stable operation.

Programmed Voltage Connection Using Programming Voltage, See Figure 6. The power supply voltage output can be programmed with an externally connected programming power supply. The output voltage of the programmed supply will maintain a one-to-one ratio with the voltage of the programming supply.

The programming supply must have a reverse current capability of 6 ma. minimum.

Alternatively, when supplies with less than 6 ma. reverse current capability are used, a resistor capable of drawing 6 ma. at the minimum programming voltage must be connected across the output terminals of the supply. This programming supply must be rated to handle all excess resistor current at the maximum programming voltage.

Operation After Thermostat Shutdown. The thermostat opens the input circuit only when the power supply output current exceeds the current rating specified for the operating ambient temperature, causing the unit to overheat. Do not exceed current rating specified for the operating ambient temperature. When the temperature of the unit decreases to a safe operating value, the thermostat will reset automatically.

Operation After Fuse Shutdown. Internal component failure is prevented by fuses which protect the components from damage caused by excessive currents. Fuses will blow when the maximum rated current value for the fuse is exceeded. Fatigue failure of fuses can occur when mechanical vibrations from the installation combine with thermally induced stresses to weaken the fuse metal. Many fuse failures are caused by a temporary condition and replacing the blown fuse will make the fuse protected circuit operative.

## GENERAL

This section describes trouble analysis routine, calibration and test procedures that are useful for servicing the Lambda power supply. A trouble chart is provided as an aid for the troubleshooter. Refer to the section on specifications and features for the minimum performance standards.

## TROUBLE ANALYSIS

Whenever trouble occurs, systematically check all fuses, primary power lines, external circuit elements, and external wiring for malfunction before trouble shooting the equipment. Failures and malfunctions often can be traced to simple causes such as improper jumpers and supply-load connections or fuse failure due to metal fatigue.

Use the electrical schematic diagram and block diagram, figure 7, as an aid to locating trouble causes. The schematic diagram contains various circuit voltages that are averages for normal no load operation. Measure these voltages using the conditions for measurement specified on the schematic diagram. Use measuring probes carefully to avoid causing short circuits and damaging circuit components.

## CHECKING TRANSISTORS AND CAPACITORS

Check transistors with an in-circuit transistor checker. If no checker is available, transistors can be checked with an ohmmeter that has a highly limited current capability. Observe proper polarity for PNP or NPN to avoid error in measurement. The forward transistor resistance is low but never ZERO; backward resistance is always higher than the forward resistance.

Do not assume trouble is eliminated when only one part is replaced. This is especially true when one transistor fails, causing other transistors to fail. Replacing only one transistor and turning power on, before checking for additional faulty components could damage the replaced component.

When soldering semi-conductor devices, hold the lead being soldered with a pair of pliers or a commercial heat sink device placed between the component and the solder joint.

> NOTE: The leakage resistance obtained from a simple resistance check of a capacitor is not always an indication of a faulty capacitor. In all cases the capacitors are shunted with resistances, some of which have low values. Only a dead short is a true indication of a shorted capacitor.

## PRINTED CIRCUIT BOARD MAINTENANCE TECHNIQUES

1. If foil is intact but not covered with solder it is a good contact. Do not attempt to cover with solder.

2. Voltage measurements can be made from either side of the board. Use a needle-point probe to penetrate to the wiring whenever a protective coating is used on the wiring. A brass probe can be soldered to an alligator clip adapted to measuring instrument.

3. Always use a heat sink when soldering transistors; a transistor pad with mounting feet is an effective heat sink.

4. Broken or damaged printed wiring is usually the result of an imperfection, strain or careless soldering. To repair small breaks, tin a short piece of hook-up wire to bridge

the break, and holding the wire in place, flow solder along the length of wire so that it becomes part of the circuitry.

5. When unsoldering components from the board never pry or force loose the part; unsolder the component by using the wicking process described below:

   (a) Select a 3/16 inch tinned copper braid for use as a wick; if braid is not available, select AWG No. 14 or No. 16 stranded wire with 1/2 inch insulation removed.

   (b) Dip the wick in liquid rosin flux.

   (c) Place the wick onto the soldered connection and apply soldering iron onto the wick.

   (d) When sufficient amount of solder flows onto the wick, freeing the component, simultaneously remove iron and wick.

## TROUBLE CHART

The trouble chart is intended as a guide for locating trouble causes, and is used along with the schematic diagram.

The operating conditions assumed for the trouble chart are as follows:

(a) AC power of proper voltage and frequency is present at input terminals.

(b) Either positive or negative terminal is connected to chassis ground.

(c) The power supply is connected for constant voltage with local sensing. See schematic; dotted lines indicate jumpers connected for local sensing operation.

TROUBLE CHART

| Symptom | Probable Cause | Remedy |
|---|---|---|
| 1. No output voltage | No power input, thermostat S1 open | Check power source, S1, line cord and line cord plug; shut off unit, allow to cool and check ambient temperature |
| | Improper output terminal connection | Refer to appropriate connection diagram, and check for correct connections |
| | Faulty Q2, CR1, CR6 (or Q3 for zero-volt units) | Check Q2, CR1, CR6 (or Q3) for short and replace as required |
| 2. Unable to adjust output voltage | Damaged VOLTAGE ADJUST control | Check R1 for shorts and/or open; replace as required |
| | Supply operating as constant current source at current limit value | Remove load, check load value and check for shorts and/or improper supply-load connections; refer to appropriate diagram for correct connections |
| 3. Output voltage too high | Improper output terminal connection | Refer to appropriate connection diagram, and check for correct connections |

TROUBLE CHART (Cont'd)

| Symptom | Probable Cause | Remedy |
|---|---|---|
| 3. (Cont'd) | Faulty Q1, R1, Q8-Q12, (or Q8-Q13 or Q10-Q13 as appl) Q5, Q6 (and Q8, Q9 as appl) or CR1 | Check R1 for open; Q8-Q12, (or Q8-Q13, or Q10-Q13) Q5, Q6 (and Q8, Q9) Q1 for short; CR1 for open and replace as required. |
| 4. Output voltage too low | Load resistance improper for unit ratings | Check load resistance value |
| | Faulty Q2, Q3, R25A, (or R25), R17 | Check Q2, Q3 for short, R25A (or R25) R17 for open, replace as required |
| 5. High ripple and unregulated DC output | Load resistance improper for unit ratings | Check load resistance value |
| 6. High ripple | Improper ground | Connect terminal 6 or terminal 4 to ground terminal 5 |

PERFORMANCE CHECK

Check the ripple and regulation of the power supply using the test connection diagram shown in figure 8. Use suggested test equipment or equivalent to obtain accurate results. Refer to SPECIFICATIONS AND FEATURES for minimum performance standards.

Set the differential meter, DC VTVM (John Fluke Model 825A or equivalent) to the selected power supply operating voltage. Check the power supply load regulation accuracy while switching from the full load to no-load condition. Long load leads should be a twisted pair to minimize AC pick-up.

Use a Variac to vary the line voltage from 105-132 or 132-105 volts AC and check the power supply line regulation accuracy on the VTVM differential meter.

Use a VTVM, Ballantine 320 or equivalent, to measure rms ripple voltage of the power supply DC output. Use oscilloscope to measure peak-to-peak ripple voltage of the power supply DC output.

ADJUSTMENT OF CALIBRATION CONTROL R17

Whenever Q3, R25A (or R25*) or R17 are replaced, and voltage and current indications do not reflect maximum ratings, adjust R17 as follows:

* For models LME-0-7, LME-0-14, LME-0-32, LME-0-60 adjustment is required only when R17 or R25 is replaced. The adjustment procedure requires that the power supply is removed from associated equipment, is at an ambient temperature of 25-30°C, and is stabilized and not operating.

1. Remove AC power input to the supply.

2. Unsolder wiper of R17 from resistor housing and turn to full CW position.

3. Operate power supply for constant voltage with local sensing, connected as shown in figure 3, with no external load.

4. ** Turn voltage adjust control until minimum rated output voltage is obtained.

5. ** Apply load so that output current is 110% of 40°C rating for the unit.

6.** Using an oscilloscope, Tektronix 503 or equivalent, observe output voltage while adjusting R17 in a CCW direction. Adjust R17 until output ripple increases sharply and oscilloscope pattern changes.

7.** After adjustment is completed, remove AC power input to the supply and solder wiper of R17 to resistor housing.

8.** After soldering, check setting and repeat adjustment procedure if required.

** Perform alternate steps 4A through 9A for adjustment of R17 on models LME-0-7, 0-14, 0-32, 0-60.

4A. Turn voltage adjust control until rated output voltage is obtained.

5A. Apply load so that output current is 130% of 40°C rating for the unit.

6A. Using an oscilloscope, Tektronix 503 or equivalent, observe unit output voltage while adjusting R17 in a CCW direction. Adjust R17 until output ripple increases sharply and oscilloscope pattern changes.

7A. Place a DC ammeter of appropriate scale across output terminals 4 and 6 of the supply. The meter indication shall be a maximum of 133% of 40°C rating for the unit.

8A. After adjustment is completed, remove AC power input to the supply and solder wiper of R17 to resistor housing.

9A. After soldering, check setting and repeat adjustment procedure if required.

## SERVICE

When additional instructions are required or repair service is desired, contact the nearest office of the Lambda Electronics Corp. where trained personnel and complete facilities are ready to assist you.

Please include the power supply model and serial number together with complete details of the problem. On receipt of this information, Lambda will supply service data or advise shipping for factory repair service.

All repairs not covered by the warranty will be billed at cost and an estimate forwarded for approval before work is started.

## PARTS ORDERING

Standard Components and special components used in Lambda power supply can be obtained from the factory. In case of emergency, critical spare parts are available through any Lambda office.

The following information must be included when ordering parts:

1. Model number and serial number of power supply and purchase date.
2. Lambda part number.
3. Description of part together with circuit designation.
4. If part is not an electronic part, or is not listed, provide a description, function, and location of the part.

# PARTS LIST

The electrical parts located on all LM-E models are listed here. Parts common to a group of LM-E models are listed first. Unique parts of individual models within the group are listed separately, by model, immediately following the group common-parts listing. In addition there are separate listings of parts for the metered panel (MP) option, the Y option and the overvoltage protection (OV) option, as applicable, for all LM-E models. The parts listed for model LME-0-7 do not utilize the common parts -- unique parts listings: all the parts for this model are sequentially listed under the heading "PARTS FOR MODEL LME-0-7". Parts for the T option, V option and R option are included at the end of this listing.

MODELS LM-E3 — LM-E12

COMMON PARTS

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| C1 | Cap., mylar, 0.033 mfd ±10%, 400 vdc | CGL-33-006 | $ .27 |
| C2 | Cap., mylar, 0.22 mfd ±10%, 100 vdc | CGM-22-003 | .33 |
| C4 | Cap., elect., 3.0 mfd -10% +75%, 100 vdc | CBN-30-015 | 1.58 |
| C5 | Cap., mylar, .018 mfd ±10%, 200 vdc | CGL-18-005 | .25 |
| C6 | Same as C5 | | |
| C7* | Cap., elect., 140 mfd -10% +100%, 38 vdc | CBR-14-030 | 1.58 |
| C8 | Not used | | |
| C9 | Cap., mylar, 0.22 mfd ±10%, 200 vdc | CGM-22-002 | .41 |
| C10 | Same as C9 | | |
| C11 | Not used | | |
| C12 | Cap., mylar, 0.001 mfd ±10%, 200 vdc | CGK-10-004 | .21 |
| C13-C17 | Not used | | |
| CR1* | Rectifier, zener diode | FBM-Z104 | 4.35 |
| CR2 | Rectifier | FBL-00-030 | 1.40 |
| CR3 | Same as CR2 | | |
| CR4-CR5 | Not used | | |
| CR6 | Rectifier, zener diode | FBM-Z103 | 4.87 |
| CR7 | Same as CR2 | | |
| CR8 | Rectifier | FBL-00-083 | 3.57 |
| CR9 | Not used | | |
| CR10 | Not used | | |
| CR11 | Same as CR8 | | |
| Q1 | Transistor, NPN | FBN-L110 | 3.25 |
| Q2 | Same as Q1 | | |
| Q3 | Same as Q1 | | |
| Q4 | Not used | | |
| Q5 | Transistor, NPN | FBN-L109 | 2.75 |
| Q6 | Transistor, NPN | FBN-36845 | 4.13 |
| Q7 | Not used | | |
| R3 | Res., ww, 1,200 ohms ±3%, 2w | DFS-12-030 | .90 |
| R4* | Res., film, 15,000 ohms ±2%, 1/2w | DCT-15-013 | .30 |

MODELS LM-E3 — LM-E12 (Cont)

COMMON PARTS (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R5 | Res., film, 220 ohms ±2%, 1/2w | DCR-22-005 | $ .30 |
| R6 | Res., comp., 180,000 ohms ±10%, 1/2w | DEB-1841 | .12 |
| R7 | Res., film, 3,900 ohms ±5%, 1/2w | DCS-39-014 | .25 |
| R8 | Res., comp., 4,700 ohms ±10%, 1/4w | DCB-4721 | .12 |
| R9 | Res., comp., 150 ohms ±10%, 1/4w | DCB-1511 | .10 |
| R10 | Res., comp., 2,200 ohms ±10%, 1/2w | DEB-2221 | .12 |
| R11 | Res., comp., 22,000 ohms ±10%, 1/2w | DEB-2231 | .12 |
| R12 | Res., comp., 47 ohms ±10%, 1/2w | DEB-4701 | .12 |
| R13* | Res., ww, 600 ohms ±3%, 3w | DFR-60-005 | .89 |
| R14 | Not used | | |
| R15 | Not used | | |
| R16 | Res., comp., 470 ohms ±10%, 1/2w | DEB-4711 | .12 |
| R17 | Res., var., ww, 1,200 ohms ±10%, 1-1/2w | DNS-12-026 | 1.25 |
| R19-R21 | Not used | | |
| R22 | Res., comp., 330 ohms ±10%, 1/2w | DEB-3311 | .12 |
| R23 | Res., comp., 22 ohms ±10%, 1/2w | DEB-2201 | .12 |
| S1 | Thermostat | FKA-142-015 | 5.00 |
| XF1 | Fuseholder | HRM-00-009 | .12 |
| XF2 | Fuseholder | HRM-00-012 | .30 |

*This part not used on units with "Y" option

UNIQUE PARTS
MODEL LM-E3

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 3,600 mfd -10% +100%, 20 vdc | CBS36-044 | 2.36 |
| C18 | Cap., elect., 25,000 mfd -10% +100%, 20 vdc | CBT25-011 | 12.28 |

UNIQUE PARTS (Cont)

MODEL LM-E3 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| C19 | Same as C18 | | |
| F1 | Fuse, 5A, 3AG, SLO-BLO | FFC05-000 | $ .18 |
| F2 | Fuse, 40A, 4AG, NORM-BLO | FFE40-000 | .25 |
| Q8 | Transistor | FBN36972 | 6.50 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 300 ohms ±5%, 5w | DNR30-016 | 1.95 |
| R2 | Res., ww, 430 ohms ±3%, 3w | DFR43-058 | .50 |
| R18 | Not used | | |
| R24 | Res., comp., 330 ohms ±10%, 1w | DGB3311 | .10 |
| R25A | Res., ww, one section, 0.10 ohm ±5%, 11w | DFM20-054 | 1.50 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.10 ohm ±5%, 11w each section | DFM20-054 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E4 | 49.50 |

MODEL LM-E3P3

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 3,600 mfd -10% +100%, 20 vdc | CBS36-044 | 2.36 |
| C18 | Cap., elect., 25,000 mfd -10% +100%, 20 vdc | CBT25-011 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 5A, 3AG, SLO-BLO | FFC05-000 | .18 |
| F2 | Fuse, 40A, 4AG, NORM-BLO | FFE40-000 | .25 |
| Q8 | Transistor | FBN36972 | 6.50 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 600 ohms ±5%, 5w | DNR-60-028 | 2.50 |
| R2 | Res., ww, 430 ohms ±3%, 3w | DFR43-058 | .50 |
| R18 | Not used | | |
| R24 | Res., comp., 680 ohms ±10%, 2w | DHB6811 | .15 |
| R25A | Res., ww, one section, 0.10 ohm ±5%, 11w | DFM20-054 | 1.50 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.10 ohm ±5%, 11w each section | DFM20-054 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E4 | 49.50 |

MODEL LM-E3P6

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 3,600 mfd -10% +100%, 20 vdc | CBS36-044 | 2.36 |
| C18 | Cap., elect., 25,000 mfd -10% +100%, 20 vdc | CBT25-011 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 5A, 3AG, SLO-BLO | FFC05-000 | .18 |
| F2 | Fuse, 40A, 4AG, NORM-BLO | FFE40-000 | .25 |
| Q8 | Transistor | FBN36972 | 6.50 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 600 ohms ±5%, 5w | DNR-60-028 | 2.50 |
| R2 | Res., ww, 430 ohms ±3%, 3w | DFR43-058 | .50 |

UNIQUE PARTS (Cont)

MODEL LM-E3P6 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R18 | Not used | | |
| R24 | Res., comp., 680 ohms ±10%, 2w | DHB6811 | $ .15 |
| R25A | Res., ww, one section, 0.10 ohm ±5%, 11w | DFM20-054 | 1.50 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.10 ohm ±5%, 11w each section | DFM20-054 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E4 | 49.50 |

MODEL LM-E4

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 3,600 mfd -10% +100%, 20 vdc | CBS36-044 | 2.36 |
| C18 | Cap., elect., 25,000 mfd -10% +100%, 20 vdc | CBT25-011 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 5A, 3AG, SLO-BLO | FFC05-000 | .18 |
| F2 | Fuse, 40A, 4AG, NORM-BLO | FFE40-000 | .25 |
| Q8 | Transistor | FBN36972 | 6.50 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 600 ohms ±5%, 5w | DNR-60-028 | 2.50 |
| R2 | Res., ww, 600 ohms ±3%, 3w | DFR-60-005 | .89 |
| R18 | Not used | | |
| R24 | Res., comp., 680 ohms ±10%, 2w | DHB6811 | .15 |
| R25A | Res., ww, one section, 0.10 ohm ±5%, 11w | DFM20-054 | 1.50 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.10 ohm ±5%, 11w each section | DFM20-054 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E4 | 49.50 |

MODEL LM-E4P5

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 3,600 mfd -10% +100%, 20 vdc | CBS36-044 | 2.36 |
| C18 | Cap., elect., 25,000 mfd -10% +100%, 20 vdc | CBT25-011 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 7A, 3AG, SLO-BLO | FFC07-000 | .21 |
| F2 | Fuse, 40A, 4AG, NORM-BLO | FFE40-000 | .25 |
| Q8 | Transistor | FBN36972 | 6.50 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 600 ohms ±5%, 5w | DNR-60-028 | 2.50 |
| R2 | Res., ww, 650 ohms ±3%, 3w | DFR-65-062 | 1.00 |
| R18 | Res., film, 390 ohms ±5%, 1/2w | DCR39-004 | .20 |
| R24 | Res., comp., 680 ohms ±10%, 2w | DHB6811 | .15 |
| R25A | Res., ww, one section, 0.10 ohm ±5%, 11w | DFM20-054 | 1.50 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.10 ohm ±5%, 11w each section | DFM20-054 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E5 | 49.50 |

UNIQUE PARTS (Cont)

MODEL LM-E5

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| C3 | Cap., elect., 3,600 mfd -10% +100%, 20 vdc | CBS36-044 | $ 2.36 |
| C18 | Cap., elect., 25,000 mfd -10% +100%, 20 vdc | CBT25-011 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 7A, 3AG, SLO-BLO | FFC07-000 | .21 |
| F2 | Fuse, 40A, 4AG, SLO-BLO | FFE40-000 | .25 |
| Q8 | Transistor | FBN36972 | 6.50 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 600 ohms ±5%, 5w | DNR-60-028 | 2.50 |
| R2 | Res., ww, 650 ohms ±3%, 3w | DFR-65-062 | 1.00 |
| R18 | Res., film, 1,300 ohms ±5%, 1/2w | DCS13-010 | .25 |
| R24 | Res., comp., 680 ohms ±10%, 2w | DHB6811 | .15 |
| R25A | Res., ww, one section, 0.10 ohm ±5%, 11w | DFM20-054 | 1.50 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.10 ohm ±5% 11w each section | DFM20-054 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E5 | 49.50 |

MODEL LM-E6

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 3,600 mfd -10% +100%, 20 vdc | CBS36-044 | 2.36 |
| C18 | Cap., elect., 25,000 mfd -10% +100%, 20 vdc | CBT25-011 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 7A, 3AG, SLO-BLO | FFC07-000 | .21 |
| F2 | Fuse, 40A, 4AG, NORM-BLO | FFE40-000 | .25 |
| Q8 | Transistor | FBN36972 | 6.50 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 600 ohms ±5%, 5w | DNR-60-028 | 2.50 |
| R2 | Res., ww, 800 ohms ±3%, 2w | DFR80-037 | .84 |
| R18 | Res., film, 1,300 ohms ±5%, 1/2w | DCS13-010 | .25 |
| R24 | Res., comp., 680 ohms ±10%, 2w | DHB6811 | .15 |
| R25A | Res., ww, one section, 0.10 ohm ±5%, 11w | DFM20-054 | 1.50 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.10 ohm ±5%, 11w each section | DFM20-054 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E6 | 49.50 |

MODEL LM-E8

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 3,600 mfd -10% +100%, 20 vdc | CBS36-044 | 2.36 |
| C18 | Cap., elect., 25,000 mfd -10% +100%, 20 vdc | CBT25-011 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 8A, 3AB, NORM-BLO | FFJ-08-000 | .35 |
| F2 | Fuse, 40A, 4AG, NORM-BLO | FFE40-000 | .25 |

UNIQUE PARTS (Cont)

MODEL LM-E8 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| Q8 | Transistor | FBN36485 | $ 4.13 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 1,000 ohms ±5%, 5w | DNS10-027 | 1.50 |
| R2 | Res., ww, 1,200 ohms ±3%, 2w | DFS12-030 | .90 |
| R18 | Res., film, 2,400 ohms ±5%, 1/2w | DCS24-001 | .25 |
| R24 | Res., comp., 1,500 ohms ±10%, 2w | DHB1521 | .24 |
| R25A | Res., ww, one section, 0.18 ohm ±5%, 11w | DFM36-049 | 1.60 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.18 ohm ±5%, 11w each section | DFM36-049 | 1.60 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E8 | 49.50 |

MODEL LM-E10

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 2,100 mfd -10% +100%, 35 vdc | CBS21-043 | 3.67 |
| C18 | Cap., elect., 14,000 mfd -10% +100%, 35 vdc | CBT14-012 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 8A, 3AB, NORM-BLO | FFJ-08-000 | .35 |
| F2 | Fuse, 30A, 4AG, NORM-BLO | FFE30-000 | .20 |
| Q8 | Transistor | FBN36485 | 4.13 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 2,200 ohms ±5%, 5w | DNS-22-056 | 2.50 |
| R2 | Res., ww, 1,200 ohms ±3%, 2w | DFS12-030 | .90 |
| R18 | Res., film, 2,400 ohms ±5%, 1/2w | DCS24-001 | .25 |
| R24 | Res., comp., 1,500 ohms ±10%, 2w | DHB1521 | .24 |
| R25A | Res., ww, one section, 0.30 ohm ±5%, 11w | DFM60-050 | 1.45 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.30 ohm ±5%, 11w each section | DFM60-050 | 1.45 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E10 | 49.50 |

MODEL LM-E12

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 2,100 mfd -10% +100%, 35 vdc | CBS21-043 | 3.67 |
| C18 | Cap., elect., 14,000 mfd -10% +100%, 35 vdc | CBT14-012 | 12.28 |
| C19 | Same as C18 | | |
| F1 | Fuse, 8A, 3AB, NORM-BLO | FFJ-08-000 | .35 |
| F2 | Fuse, 30A, 4AG, NORM-BLO | FFE30-000 | .20 |
| Q8 | Transistor | FBN36485 | 4.13 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 2,200 ohms ±5%, 5w | DNS-22-056 | 2.50 |
| R2 | Res., ww, 1,800 ohms ±3%, 3w | DFS18-048 | .60 |
| R18 | Res., film, 2,400 ohms ±5%, 1/2w | DCS24-001 | .25 |

UNIQUE PARTS (Cont)

MODEL LM-E12 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R24 | Res., comp., 1,500 ohms ±10%, 2w | DHB1521 | $ .24 |
| R25A | Res., ww, one section, 0.30 ohm ±5%, 11w | DFM60-050 | 1.45 |
| R26A, B | Res., ww, tapped, two sections, A, B, 0.30 ohm ±5%, 11w each section | DFM60-050 | 1.45 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E12 | 49.50 |

MODELS LM-E15 — LM-E60

COMMON PARTS

| | | | |
|---|---|---|---|
| C1 | Cap., mylar, 0.033 mfd ±10%, 400 vdc | CGL-33-006 | .27 |
| C2 | Cap., mylar, 0.22 mfd ±10%, 100 vdc | CGM-22-003 | .33 |
| C4 | Cap., elect., 3.0 mfd -10% +75%, 100 vdc | CBN-30-015 | 1.58 |
| C5 | Cap., mylar, 0.018 mfd ±10%, 200 vdc | CGL-18-005 | .25 |
| C6+ | Same as C5 | | |
| C7* | Cap., elect., 140 mfd -10% +100% 38 vdc | CBR-14-030 | 1.58 |
| C8-C10 | Not used | | |
| C11 | Cap., mylar, 0.22 mfd ±10%, 200 vdc | CGM-22-002 | .41 |
| C12 | Cap., mylar, 0.001 mfd ±10%, 200 vdc | CGK-10-004 | .21 |
| C13-C17 | Not used | | |
| CR1* | Rectifier, zener diode | FBM-Z104 | 4.35 |
| CR2 | Rectifier | FBL-00-030 | 1.40 |
| CR3 | Same as CR2 | | |
| CR4 | Not used | | |
| CR5 | Not used | | |
| CR6 | Rectifier, zener diode | FBM-Z103 | 4.87 |
| CR7 | Same as CR2 | | |
| CR8 thru CR11 | Rectifier | FBL-00-083 | 3.57 |
| F1+ | Fuse, 3AB "NORM-BLO", 10 amperes | FFJ-10-000 | .25 |
| F2 | Fuse, 4AG "NORM-BLO", 30 amperes | FFE 30-000 | .20 |
| Q1 | Transistor, NPN | FBN-L110 | 3.25 |
| Q2 | Same as Q1 | | |
| Q3 | Same as Q1 | | |
| Q4 | Not used | | |
| Q5+ | Transistor, NPN | FBN-L109 | 2.75 |
| Q7 | Not used | | |
| R3 | Res., ww, 1,200 ohms ±3%, 2w | DFS-12-030 | .90 |
| R4* | Res., film, 15,000 ohms ±2%, 1/2w | DCT-15-013 | .30 |
| R5 | Res., film, 220 ohms ±2%, 1/2w | DCR-22-005 | .30 |
| R6 | Res., comp., 180,000 ohms ±10%, 1/2w | DEB-1841 | .12 |
| R7 | Res., film, 3,900 ohms ±5%, 1/2w | DCS-39-014 | .25 |
| R8 | Res., comp., 4,700 ohms ±10%, 1/4w | DCB-4721 | .12 |
| R9 | Res., comp., 150 ohms ±10%, 1/4w | DCB-1511 | .10 |
| R10 | Res., comp., 2,200 ohms ±10%, 1/2w | DEB-2221 | .12 |
| R11 | Res., comp., 22,000 ohms ±10%, 1/2w | DEB-2231 | .12 |

MODELS LM-E15 — LM-E60 (Cont)

COMMON PARTS (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R12 | Res., comp., 47,000 ohms ±10%, 1/2w | DEB-4701 | $ .12 |
| R13* | Res., ww, 600 ohms ±3%, 3w | DFR-60-005 | .89 |
| R14 | Not used | | |
| R15 | Not used | | |
| R16 | Res., comp., 470 ohms ±10%, 1/2w | DEB-4711 | .12 |
| R17 | Res., var., ww, 1,200 ohms ±10%, 1-1/2w | DNS-12-026 | 1.25 |
| R19-R21 | Not used | | |
| R22 | Res., comp., 330 ohms ±10%, 1/2w | DEB-3311 | .12 |
| R23 | Res., comp., 22 ohms ±10%, 1/2w | DEB-2201 | .12 |
| S1 | Thermostat | FKA-142-015 | 5.00 |
| XF1 | Fuseholder | HRM-00-009 | .42 |
| XF2 | Fuseholder | HRM-00-012 | .30 |

+This part differs on model LM-E60; see LM-E60 unique parts list
*This component not used on units with "Y" option

UNIQUE PARTS

MODEL LM-E15

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 2,100 mfd -10% +100%, 35 vdc | CBS21-043 | 3.67 |
| C18 | Cap., elect., 14,000 mfd -10% +100%, 35 vdc | CBT14-012 | 12.28 |
| C19 | Same as C18 | | |
| Q6 | Transistor, NPN | FBN36485 | 4.13 |
| Q8 | Transistor, NPN | FBN36485 | 4.13 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 2,200 ohms ±5%, 5w | DNS-22-056 | 2.50 |
| R2 | Res., ww, 1,800 ohms ±3%, 3w | DFS18-048 | .60 |
| R18 | Res., film, 2,400 ohms ±5%, 1/2w | DCS24-001 | .25 |
| R24 | Res., comp., 2,200 ohms ±10%, 2w | DHB2221 | .25 |
| R25A | Res., ww, tapped, one section, 0.47 ohm ±5%, 8w | DFM94-051 | 3.30 |
| R26A, B | Res., ww, tapped, two sections A, B, 0.47 ohm ±5%, 8w each section | DFM94-051 | 3.30 |
| R27A, B | Same as R26 A, B | | |
| T1 | Transformer | ABA-E15 | 49.50 |

MODEL LM-E18

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 2,100 mfd -10% +100%, 35 vdc | CBS21-043 | 3.67 |
| C18 | Cap., elect., 14,000 mfd -10% +100%, 35 vdc | CBT14-012 | 12.28 |
| C19 | Same as C18 | | |
| Q6 | Transistor, NPN | FBN36220 | 6.60 |
| Q8 | Transistor, NPN | FBN36220 | 6.60 |
| Q9-Q12 | Same as Q8 | | |

UNIQUE PARTS (Cont)

MODEL LM-E18 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R1 | Res., var., ww, 2,200 ohms, ±5%, 5w | DNS-22-056 | $ 2.50 |
| R2 | Res., ww, 2,500 ohms, ±3%, 3w | DFS25-036 | .53 |
| R18 | Res., film, 6,800 ohms ±5%, 1/2w | DCS68-021 | .25 |
| R24 | Res., comp., 2,200 ohms ±10%, 2w | DHB2221 | .25 |
| R25A | Res., ww, tapped, one section, 0.47 ohm ±5%, 8w | DFM94-051 | 3.30 |
| R26A, B | Res., ww, tapped, two sections A, B, 0.47 ohm ±5%, 8w each section | DFM94-051 | 3.30 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E18 | 49.50 |

MODEL LM-E20

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 1,100 mfd -10% +100%, 60 vdc | CBS11-042 | 3.67 |
| C18 | Cap., elect., 7,800 mfd -10% +100%, 60 vdc | CBS78-045 | 8.18 |
| C19 | Same as C18 | | |
| Q6 | Transistor, NPN | FBN36220 | 6.60 |
| Q8 | Transistor, NPN | FBN36220 | 6.60 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 2,200 ohms, ±5%, 5w | DNS-22-056 | 2.50 |
| R2 | Res., ww, 2,500 ohms ±3%, 3w | DFS25-036 | .53 |
| R18 | Res., film, 6,800 ohms ±5%, 1/2w | DCS68-021 | .25 |
| R24 | Res., comp., 3,300 ohms ±10%, 2w | DHB3321 | .13 |
| R25A | Res., ww, tapped, one section, 0.75 ohm ±5%, 8w | DFN15-056 | 1.50 |
| R26A, B | Res., ww, tapped, two sections A, B, 0.75 ohm ±5%, 8w each section | DFN15-056 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E20 | 49.50 |

MODEL LM-E24

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 1,100 mfd -10% +100%, 60 vdc | CBS11-042 | 3.67 |
| C18 | Cap., elect., 7,800 mfd -10% +100%, 60 vdc | CBS78-045 | 8.18 |
| C19 | Same as C18 | | |
| Q6 | Transistor, NPN | FBN36220 | 6.60 |
| Q8 | Transistor, NPN | FBN36220 | 6.60 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 2,200 ohms, ±5%, 5w | DNS-22-056 | 2.50 |
| R2 | Res., ww, 3,600 ohms, ±3%, 3w | DFS36-050 | .60 |

UNIQUE PARTS (Cont)

MODEL LM-E24 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R18 | Res., film, 6,800 ohms ±5%, 1/2w | DCS68-021 | $ .25 |
| R24 | Res., comp., 3,300 ohms ±10%, 2w | DHB3321 | .13 |
| R25A | Res., ww, tapped, one section, 0.75 ohm ±5%, 8w | DFN15-056 | 1.50 |
| R26A, B | Res., ww, tapped, two sections A, B, 0.75 ohm ±5%, 8w each section | DFN15-056 | 1.50 |
| R27A, B | Same as R26A, B | | |
| T1 | Transformer | ABA-E24 | 49.50 |

MODEL LM-E28

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 1,100 mfd -10% +100%, 60 vdc | CBS11-042 | 3.67 |
| C18 | Cap., elect., 7,800 mfd -10% +100%, 60 vdc | CBS78-045 | 8.18 |
| C19 | Same as C18 | | |
| Q6 | Transistor, NPN | FBN36220 | 6.60 |
| Q8 | Transistor, NPN | FBN36220 | 6.60 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 2,200 ohms, ±5%, 5w | DNS-22-056 | 2.50 |
| R2 | Res., ww, 4,500 ohms, ±3%, 3w | DFS45-044 | .87 |
| R18 | Res., film, 6,800 ohms ±5%, 1/2w | DCS68-021 | .25 |
| R24 | Res., comp., 3,300 ohms ±10%, 2w | DHB3321 | .13 |
| R25A | Res., ww, tapped, one section, 0.75 ohm ±5%, 8w | DFN15-056 | 1.50 |
| R26A, B | Res., ww, tapped, two sections A, B, 0.75 ohm ±5%, 8w each section | DFN15-056 | 1.50 |
| R27A, B | Same as R26 A, B | | |
| T1 | Transformer | ABA-E28 | 49.50 |

MODEL LM-E36

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 1,100 mfd -10% +100%, 60 vdc | CBS11-042 | 3.67 |
| C18 | Cap., elect., 7,800 mfd -10% +100%, 60 vdc | CBS78-045 | 8.18 |
| C19 | Same as C18 | | |
| Q6 | Transistor, NPN | FBN36487 | 5.63 |
| Q8 | Transistor, NPN | FBN36487 | 5.63 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 3,300 ohms, ±5%, 5w | DNS-33-057 | 2.50 |
| R2 | Res., ww, 5,600 ohms, ±3%, 3w | DFS56-053 | .60 |
| R18 | Res., film, 10,000 ohms ±5%, 1/2w | DCT10-008 | .25 |
| R24 | Res., comp., 3,300 ohms ±10%, 2w | DHB3321 | .13 |
| R25A | Res., ww, tapped, one section, 1.5 ohm ±5%, 8w | DFN30-057 | 2.04 |

UNIQUE PARTS (Cont)

MODEL LM-E36 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R26A, B | Res., ww, tapped, two sections A, B, 1.5 ohm ±5%, 8w each section | DFN30-057 | $ 2.04 |
| R27A, B | Same as R26 A, B | | |
| T1 | Transformer | ABA-E36 | 49.50 |

MODEL LM-E48

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 400 mfd -10% +100%, 100 vdc | CBR40-044 | 2.68 |
| C18 | Cap., elect., 3,000 mfd -10% +100%, 100 vdc | CBS30-047 | 11.16 |
| C19 | Same as C18 | | |
| Q6 | Transistor, NPN | FBN36487 | 5.63 |
| Q8 | Transistor, NPN | FBN36487 | 5.63 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 3,300 ohms ±5%, 5w | DNS-33-057 | 2.50 |
| R2 | Res., ww, 8,000 ohms, ±3%, 3w | DFS80-054 | 1.03 |
| R18 | Res., film, 10,000 ohms ±5%, 1/2w | DCT10-008 | .25 |
| R24 | Res., comp., 4,700 ohms ±10%, 2w | DHB4721 | .15 |
| R25A | Res., ww, tapped, one section, 1.5 ohm ±5%, 8w | DFN30-057 | 2.04 |
| R26A, B | Res., ww, tapped, two sections A, B, 1.5 ohm ±5% 8w each section | DFN30-057 | 2.04 |
| R27A, B | Same as R26 A, B | | |
| T1 | Transformer | ABA-E48 | 49.50 |

MODEL LM-E60

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 400 mfd -10 +100%, 100 vdc | CBR-40-044 | 2.68 |
| C6 | Cap., mylar, 0.0068 mfd ±10%, 200 vdc | CGK-68-001 | .34 |
| C18 | Cap., elect., 3,000 mfd -10 +100%, 100 vdc | CBS-30-047 | 11.16 |
| C19 | Same as C18 | | |
| F1 | Fuse, 8A, 3AB, NORM-BLO | FFJ-08-000 | .35 |
| Q5 | Transistor, NPN | FBN-L108 | 2.25 |
| Q6 | Transistor, NPN | FBN-35902 | 9.90 |
| Q8 | Transistor, NPN | FBN-35902 | 9.90 |
| Q9-Q12 | Same as Q8 | | |
| R1 | Res., var., ww, 4,500 ohms ±5%, 5w | DNS-45-050 | 2.50 |
| R2 | Res., ww, 10,000 ohms ±3%, 5w | DFT-10-042 | .65 |
| R18 | Res., film, 15,000 ohms ±2%, 1/2w | DCT-15-013 | .30 |
| R24 | Res., comp., 5,600 ohms ±10%, 2w | DCS-56-033 | .20 |
| R25A | Res., ww, tapped, one section, 1.5 ohms ±5%, 8w | DFN-30-057 | 2.04 |
| R26A, B | Res., ww, tapped, two sections A, B, 1.5 ohms ±5%, 8w each section | DFN-30-057 | 2.04 |

UNIQUE PARTS (Cont)

MODEL LM-E60 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R27A, B | Same as R26A, B | | $ |
| T1 | Transformer | ABA-E60 | 49.50 |

MODELS LM-E100 — LM-E150

COMMON PARTS

| | | | |
|---|---|---|---|
| C1 | Cap., mylar, 0.033 mfd ±10%, 400 vdc | CGL-33-006 | .27 |
| C2 | Cap., mylar, 0.15 mfd ±10%, 200 vdc | CGM-15-005 | .40 |
| C3 | Cap., elect., 200 mfd -10 +100%, 250 vdc | CBR-20-045 | 2.68 |
| C4 | Cap., elect., 3.5 mfd -10 +100%, 300 vdc | CBN-35-018 | 1.12 |
| C5, C6 | Cap., mylar, 0.01 mfd ±10%, 200 vdc | CGL-10-002 | .36 |
| C7* | Cap., elect., 140 mfd -10 +100%, 38 vdc | CBR-14-030 | 1.58 |
| C8-C10 | Not assigned | | |
| C11 | Cap., mylar, 0.033 mfd ±10%, 400 vdc | CGL-33-006 | .27 |
| C12 | Cap., mylar, 0.001 mfd ±10%, 200 vdc | CGK-10-004 | .21 |
| C13, C14 | Cap., mylar, .018 mfd ±10%, 200 vdc | CGL-18-005 | .25 |
| C15-C17 | Not assigned | | |
| C18, C19 | Cap., elect., 1,200 mfd -10 +100%, 250 vdc | CBS-12-048 | 11.16 |
| CR1* | Rectifier, zener diode | FBM-Z104 | 1.35 |
| CR2 | Rectifier | FBL-00-030 | 1.40 |
| CR3 | Same as CR2 | | |
| CR4, CR5 | Not assigned | | |
| CR6 | Rectifier, zener diode | FBM-Z103 | 4.87 |
| CR7 | Same as CR2 | | |
| F1 | Fuse, 'NORM-BLO", 8A. 3AB | FFJ-08-000 | .35 |
| Q1 | Transistor, NPN | FBN-L110 | 3.25 |
| Q2 | Same as Q1 | | |
| Q3 | Same as Q1 | | |
| Q4 | Not assigned | | |
| Q5 | Transistor, NPN | FBN-L108 | 2.25 |
| Q6 | Transistor, NPN | FBN-35903 | 5.17 |
| Q7 | Not assigned | | |
| Q8 | Same as Q5 | | |
| Q9 | Same as Q6 | | |
| Q10 | Transistor, NPN | FBN-35902 | 9.90 |
| Q11 Thru Q13 | Same as Q10 | | |
| R1 | Res., var., ww, 9,000 ohms ±5%, 5w | DNS-90-058 | 2.50 |
| R3 | Res., ww, 1,200 ohms ±3%, 2w | DFS-12-030 | .90 |
| R4* | Res., film, 15,000 ohms ±2%, 1/2w | DCT-15-013 | .30 |
| R5 | Res., film, 220 ohms ±2%, 1/2w | DCR-22-005 | .30 |
| R6 | Res., comp., 180,000 ohms ±10%, 1/2w | DEB-1841 | .12 |
| R7 | Res., film, 3,900 ohms ±5%, 1/2w | DCS-39-014 | .25 |
| R8 | Res., comp., 4,700 ohms ±10%, 1/4w | DCB-4721 | .12 |
| R9 | Res., comp., 150 ohms ±10%, 1/4w | DCB-1511 | .10 |

MODELS LM-E100 — LM-E150 (Cont)

COMMON PARTS (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R10 | Res., comp., 3,900 ohms ±10%, 1/2w | DEB-3921 | $ .12 |
| R11 | Res., comp., 22,000 ohms ±10%, 1/2w | DEB-2231 | .12 |
| R12 | Res., comp., 47 ohms ±10%, 1/2w | DEB-4701 | .12 |
| R13* | Res., ww, 600 ohms ±3%, 3w | DFR-60-005 | .89 |
| R14, R15 | Not assigned | | |
| R16 | Res., comp., 1,200 ohms ±10%, 1/2w | DEB-1221 | .12 |
| R17 | Res., var., ww, 1,200 ohms ±10%, 1-1/2w | DNS-12-026 | 1.25 |
| R19 Thru R21 | Not assigned | | |
| R22 | Res., comp., 330 ohms ±10%, 1/2w | DEB-3311 | .12 |
| R23 | Res., comp., 56 ohms ±10%, 1/2w | DEB-5601 | .12 |
| R27 | Not assigned | | |
| R28, R29 | Res., comp., 68 ohms ±10%, 1/2w | DEB-6801 | .12 |
| R30 Thru R35 | Not assigned | | |
| R38, R39 | Not assigned | | |
| R40 | Res., film, 33,000 ohms ±10%, 2w | DCT-33-023 | .20 |
| R41 Thru R46 | Not assigned | | |
| R47 | Same as R22 | | |
| S1 | Thermostat | FKA-142-015 | 5.00 |
| XF1 | Fuseholder | HRM-00-009 | .12 |
| XF2 | Fuseholder | HRM-00-012 | .30 |

*This part not used on units with "Y" option

UNIQUE PARTS

MODEL LM-E100

| | | | |
|---|---|---|---|
| CR8 | Rectifier | FBL-00-065 | 1.15 |
| CR9 Thru CR11 | Same as CR8 | | |
| F2 | Fuse, 5A, 4AG, NORM-BLO | FFE-05-000 | .25 |
| R2 | Res., ww, 16,000 ±3%, 5w | DFT-16-039 | .85 |
| R18 | Res., film, 39,000 ohms ±5%, 1/2w | DCT-39-015 | .30 |
| R24 | Res., film, 22,000 ohms ±10%, 2w | DCT-22-020 | .20 |
| R25, R26 | Res., ww, 1.0 ohms ±3%, 3w | DFN-10-041 | .66 |
| R36, R37 | Res., ww, 8,000 ohms ±3%, 3w | DFS-80-054 | 1.03 |
| T1 | Transformer | ABA-E100 | 49.50 |

MODEL LM-E120

| | | | |
|---|---|---|---|
| CR8 | Rectifier | FBL-00-065 | 1.15 |
| CR9 Thru CR11 | Same as CR8 | | |
| F2 | Fuse, 5A, 4AG, NORM-BLO | FFE-05-000 | .25 |
| R2 | Res., ww, 20,000 ohms ±3%, 5w | DFT-20-040 | .85 |

UNIQUE PARTS (Cont)

MODEL LM-E120 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R18 | Res., film, 43,000 ohms ±5%, 1/2w | DCT-43-016 | $ .30 |
| R24 | Res., film, 22,000 ohms ±10%, 2w | DCT-22-020 | .20 |
| R25, R26 | Res., ww, 1.5 ohms ±3%, 3w | DFN-15-042 | .60 |
| R36, R37 | Res., ww, 8,000 ohms ±3%, 3w | DFS-80-054 | 1.03 |
| T1 | Transformer | ABA-E120 | 49.50 |

MODEL LM-E150

| | | | |
|---|---|---|---|
| CR8 | Rectifier | FBL-00-066 | 1.45 |
| CR9 Thru CR11 | Same as CR8 | | |
| F2 | Fuse, 3A, 4AG, NORM-BLO | FFE-03-000 | .25 |
| R2 | Res., ww, 26,000 ohms ±3%, 5w | DFT-26-041 | 1.20 |
| R18 | Res., film, 56,000 ohms ±5%, 1w | DCT-56-017 | .25 |
| R24 | Res., film, 27,000 ohms ±10%, 2w | DCT-27-021 | .20 |
| R25, R26 | Res., ww, 1.5 ohms ±3%, 3w | DFN-15-042 | .60 |
| R36, R37 | Res., ww, 10,000 ohms ±3%, 5w | DFT-10-042 | .65 |
| T1 | Transformer | ABA-E150 | 49.50 |

MODELS LME-0-14, LME-0-32, LME-0-60

COMMON PARTS

| | | | |
|---|---|---|---|
| C1 | Cap., mylar, 0.033 mfd ±10%, 400 vdc | CGL-33-006 | .27 |
| C2 | Cap., mylar, 0.22 mfd ±10%, 100 vdc | CGM-22-003 | .33 |
| C4 | Cap., elect., 3.0 mfd -10 +75%, 100 vdc | CBN-30-015 | 1.58 |
| C6 | Cap., mylar, .018 mfd ±10%, 200 vdc | CGL-18-005 | .25 |
| C7* | Cap., elect., 140 mfd -10 +100%, 38 vdc | CBR-14-030 | 1.58 |
| C9 | Cap., mylar, 0.22 mfd ±10%, 200 vdc | CGM-22-002 | .41 |
| C10, C11 | Not assigned | | |
| CR1* | Rectifier, zener diode | FBM-Z104 | 4.35 |
| CR2 | Rectifier | FBL-00-030 | 1.40 |
| CR3 Thru CR5 | Not assigned | | |
| CR6 | Rectifier, zener diode | FBM-Z103 | 4.87 |
| CR7 | Same as CR2 | | |
| CR13, CR14 | Not assigned | | |
| CR16, CR17 | Not assigned | | |
| CR18, CR19 | Same as CR2 | | |
| F1 | Fuse, "SLO-BLO", 6.25A, 3AG | FFC-06-250 | .21 |
| Q1 | Transistor, NPN | FBN-L110 | 3.25 |
| Q2 | Same as Q1 | | |
| Q3 | Same as Q1 | | |
| Q4 | Not assigned | | |
| Q7 | Not assigned | | |
| Q14 Thru Q27 | Not assigned | | |

COMMON PARTS (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| | | | $ |
| R2 | Not assigned | | |
| R3 | Res., ww, 1,100 ohms ±3%, 2w | DFS-11-061 | .60 |
| R4* | Res., film, 15,000 ohms ±2%, 1/2w | DCT-15-013 | .30 |
| R5 | Res., film, 220 ohms ±2%, 1/2w | DCR-22-005 | .30 |
| R6 | Res., comp., 180,000 ohms ±10%, 1/2w | DEB-1841 | .12 |
| R7 | Res., film, 3,900 ohms ±5%, 1/2w | DCS-39-014 | .25 |
| R8 | Res., comp., 4,700 ohms ±10%, 1/4w | DCB-4721 | .12 |
| R9 | Res., comp., 150 ohms ±10%, 1/4w | DCB-1511 | .10 |
| R10 | Res., comp., 2,200 ohms ±10%, 1/2w | DEB-2221 | .12 |
| R11, R12 | Not assigned | | |
| R13* | Res., ww, 600 ohms ±3%, 3w | DFR-60-005 | .89 |
| R14, R15 | Not assigned | | |
| R17 | Res., var., ww, 1,200 ohms ±10%, 1-1/2w | DNS-12-026 | 1.26 |
| R18 Thru R21 | Not assigned | | |
| R22 | Res., comp., 1,200 ohms ±10%, 1/2w | DEB-1221 | .12 |
| R23 | Res., comp., 22 ohms ±10%, 1/2w | DEB-2201 | .12 |
| R24 | Not assigned | | |
| R31 Thru R42 | Not assigned | | |
| R43 | Res., comp., 1,000 ohms ±10%, 1/2w | DEB-1021 | .12 |
| R46 | Res., comp., 47 ohms ±5%, 1/2w | DEB-4705 | .24 |
| S1 | Thermostat | FKA-142-015 | 5.00 |
| XF1 | Fuseholder | HRM-00-009 | .12 |
| XF2 | Fuseholder | HRM-00-012 | .30 |

*This part not used on units with "Y" option

UNIQUE PARTS

MODEL LME-0-14

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 2,100 mfd -10 +100%, 35 vdc | CBS-21-043 | 3.67 |
| C5 | Cap., mylar, .018 mfd ±10%, 200 vdc | CGL-18-005 | .24 |
| C8 | Cap., elect., 14,000 mfd -10 +100%, 35 vdc | CBT-25-011 | 12.28 |
| C12 | Cap., mylar, 0.001 mfd ±10%, 200 vdc | CGK-10-004 | .21 |
| CR8 | Rectifier | FBL-00-054 | 1.35 |
| CR9 Thru CR11 | Same as CR8 | | |
| CR12 | Rectifier | FBL-00-083 | 3 57 |
| CR15 | Not assigned | | |
| F2 | Fuse, 20A, 4AG, NORM-BLO | FFE-20-000 | .25 |
| Q5 | Transistor, NPN | FBN-L109 | 2.75 |
| Q6 | Transistor, NPN | FBN-36486 | 2.75 |
| Q8 | Transistor, NPN | FBN-36485 | 4.13 |

UNIQUE PARTS (Cont)

MODEL LME-0-14 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| | | | $ |
| Q9 Thru Q13 | Same as Q8 | | |
| Q28 | Transistor, NPN | FBN-L148 | 2.75 |
| R1 | Res., var., ww, 3,300 ohms ±5%, 5w | DNS-33-057 | 2 50 |
| R16 | Res., comp., 470 ohms ±10%, 1/2w | DEB-4711 | .12 |
| R25 Thru R30 | Res., ww, 0.75 ohms ±5%, 5w | DFM-75-044 | .82 |
| R44 | Res., comp., 2,200 ohms ±10%, 1/2w | DEB-2221 | .12 |
| R45 | Res., film, 820 ohms ±5%, 1w | DCR-82-018 | .60 |
| T1 | Transformer | ABA-E-014 | 34.00 |

MODEL LME-0-32

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 1,100 mfd -10 +100%, 60 vdc | CBS-11-042 | 3.67 |
| C5 | Cap., mylar, .018 mfd ±10%, 200 vdc | CGL-18-005 | .24 |
| C8 | Cap., elect., 7,800 mfd -10 +100%, 60 vdc | CBS-78-045 | 8.18 |
| C12 | Not assigned | | |
| CR8 | Rectifier | FBL-00-054 | 1.35 |
| CR9 Thru CR11 | Same as CR8 | | |
| CR12 | Rectifier | FBL-00-083 | 3.57 |
| CR15 | Not assigned | | |
| F2 | Fuse, 10A, 4AG, NORM-BLO | FFE-10-000 | .25 |
| Q5 | Transistor, NPN | FBN-L109 | 2.75 |
| Q6 | Transistor, NPN | FBN-36488 | 3.75 |
| Q8 | Transistor, NPN | FBN-36487 | 5.63 |
| Q9 Thru Q13 | Same as Q8 | | |
| Q28 | Transistor. NPN | FBN-L148 | 2.75 |
| R1 | Res., var., ww, 9,000 ohms ±5%, 5w | DNS-90-058 | 2.50 |
| R16 | Res., comp., 430 ohms ±10%, 1/2w | DEB-4711 | .12 |
| R25 Thru R30 | Res., ww, 3.0 ohms ±3%, 3w | DFN-30-023 | .59 |
| R44 | Res., comp., 4,700 ohms ±10%, 2w | DHB-4721 | .15 |
| R45 | Res., ww, 2,000 ohms ±3%, 3w | DFS-20-032 | .87 |
| T1 | Transformer | ABA-E-032 | 34.00 |

MODEL LME-0-60

| | | | |
|---|---|---|---|
| C3 | Cap., elect., 400 mfd -10 +100%, 100 vdc | CBR-40-044 | 2.68 |
| C5 | Cap., mylar, 0.01 mfd ±10%, 200 vdc | CGL-10-002 | .36 |
| C8 | Cap., elect., 3,000 mfd -10 +100%, 100 vdc | CBS-30-047 | 11.16 |
| C12 | Not assigned | | |
| CR8 | Rectifier | FBL-00-054 | 1.35 |
| CR9 Thru CR11 | Same as CR8 | | |

UNIQUE PARTS (Cont)

MODEL LME-0-60 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| CR12 | Not assigned | | |
| CR15 | Rectifier | FBL-00-065 | $ 1.15 |
| F2 | Fuse,5A,4AG,NORM-BLO | FFE-05-000 | .25 |
| Q5 | Transistor, NPN | FBN-L108 | 2.25 |
| Q6 | Transistor, NPN | FBN-35903 | 5.17 |
| Q8 | Transistor, NPN | FBN-35902 | 9.90 |
| Q9 Thru Q13 | Same as Q8 | | |
| Q28 | Same as Q5 | | |
| R1 | Res., var., ww, 13,000 ohms ±5%, 5w | DNT-13-032 | 5.75 |
| R16 | Res., comp., 820 ohms ±10%, 1/2w | DEB-8211 | .12 |
| R25 Thru R30 | Res., ww, 3.0 ohms ±3%, 3w | DFN-30-023 | .59 |
| R44, R45 | Res., ww, 4,500 ohms ±3%, 3w | DFS-45-044 | .87 |
| T1 | Transformer | ABA-E-060 | 34.00 |

PARTS FOR MODEL LME-0-7

| | | | |
|---|---|---|---|
| C1 | Cap., mylar, 0.033 mfd ±10%, 400 vdc | CGL-33-006 | .27 |
| C2 | Cap., mylar, 0.22 mfd ±10%, 100 vdc | CGM-22-003 | .33 |
| C3 | Cap., elect., 3,600 ohms -10 +100%, 20 vdc | CBS-36-044 | 2.36 |
| C4 | Cap., elect., 3.0 mfd -10 +75%, 100 vdc | CBN-30-015 | 1.58 |
| C5, C6 | Cap., mylar, .018 mfd ±10%, 200 vdc | CGL-18-005 | .25 |
| C7* | Cap., elect., 140 mfd -10 +100%, 38 vdc | CBR-14-030 | 1.58 |
| C8 | Cap., elect., 25,000 mfd -10 +100%, 20 vdc | CBT-25-011 | 12.28 |
| C9, C10 | Cap., mylar, 0.22 mfd ±10%, 200 vdc | CGM-22-002 | .41 |
| CR1* | Rectifier, zener diode | FBM-Z104 | 4.35 |
| CR2 | Rectifier | FBL-00-030 | 1.40 |
| CR3 Thru CR5 | Not assigned | | |
| CR6 | Rectifier, zener diode | FBM-Z103 | 4.87 |
| CR7 | Same as CR2 | | |
| CR8 | Rectifier | FBL-00-054 | 1.35 |
| CR9 | Not assigned | | |
| CR10 | Same as CR8 | | |
| CR11 | Not assigned | | |
| CR12 | Rectifier | FBL-00-083 | 3.57 |
| F1 | Fuse, "SLO-BLO", 6.25A, 3AG | FFC-06-250 | .21 |
| F2 | Fuse, 30A, 4AG, NORM-BLO | FFE-30-000 | .20 |
| Q1 | Transistor, NPN | FBN-L110 | 3.25 |
| Q2 | Same as Q1 | | |
| Q3 | Same as Q1 | | |
| Q4 | Not assigned | | |
| Q5 | Transistor, NPN | FBN-L109 | 2.75 |
| Q6 | Transistor, NPN | FBN-36486 | 2.75 |
| Q7 | Not assigned | | |
| Q8 | Transistor, NPN | FBN-36485 | 4.13 |
| Q9 Thru Q13 | Same as Q8 | | |
| R1 | Res., var., ww, 2,200 ohms ±5%, 5w | DNS-22-056 | 2.50 |

PARTS FOR MODEL LME-0-7 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| R2 | Not assigned | | |
| R3 | Res., ww, 1,100 ohms ±3%, 2w | DFS-11-061 | $ .60 |
| R4* | Res., film, 15,000 ohms ±2%, 1/2w | DCT-15-013 | .30 |
| R5 | Res., film, 220 ohms ±2%, 1/2w | DCR-22-005 | .30 |
| R6 | Res., comp., 180,000 ohms ±10%, 1/2w | DEB-1841 | .12 |
| R7 | Res., film, 3,900 ohms ±5%, 1/2w | DCS-39-014 | .25 |
| R8 | Res., comp., 4,700 ohms ±10%, 1/2w | DEB-4721 | .12 |
| R9 | Res., comp., 150 ohms ±10%, 1/4w | DCB-1511 | .10 |
| R10 | Res., comp., 2,200 ohms ±10%, 1/2w | DEB-2221 | .12 |
| R11, R12 | Not assigned | | |
| R13* | Res., ww, 600 ohms ±3%, 3w | DFR-60-005 | .89 |
| R14, R15 | Not assigned | | |
| R16 | Res., comp., 470 ohms ±10%, 1/2w | DEB-4711 | .12 |
| R17 | Res., var., ww, 1,200 ohms ±10%, 1-1/2w | DNS-12-026 | 1.25 |
| R18, R19 | Not assigned | | |
| R20 | Res., ww, 100 ohms ±3%, 10w | DFR-10-056 | 1.05 |
| R21 | Not assigned | | |
| R22 | Res., comp., 1,200 ohms ±10%, 1/2w | DEB-1221 | .12 |
| R23 | Res., comp., 22 ohms ±10%, 1/2w | DEB-2201 | .12 |
| R24 | Not assigned | | |
| R25A,B Thru R27A,B | Res., ww, center tapped, 0.47 ohms ±5%, 8w/ section | DFM-94-051 | 3.30 |
| S1 | Thermostat | FKA-142-015 | 5.00 |
| T1 | Transformer | ABA-E-07 | 34.00 |
| XF1 | Fuseholder | HRM-00-009 | .12 |
| XF2 | Fuseholder | HRM-00-012 | .30 |

*This part not used on units with "Y" option

PARTS FOR "MP" OPTION MODELS MP-5, P-5

| | | | |
|---|---|---|---|
| DS1 | Pilot light assembly (ALL) | HRD 00-007 | .83 |
| F1 | Fuse, 3 AG, "SLO-BLO", 5 amperes (LM-E3 thru LM-E4) | FFC 05-000 | .18 |
| F1 | Fuse, 3 AG, "SLO-BLO", 7 amperes (LM-E4P5, E5, E6) | FFC 07-000 | .21 |
| F1 | Fuse, 3 AG, "SLO-BLO", 8 amperes (LM-E8 thru LM-E12. LM-E60 thru LM-E150) | FFC 08-000 | .21 |
| F1 | Fuse, 3 AG, "SLO-BLO", 10 amperes (LM-E15 thru LM-E48) | FFC 10-000 | .21 |
| F1 | Fuse, 3 AG, "SLO-BLO", 6.25 amperes (LME-0-7 thru LME-0-60) | FFC-06-250 | .21 |
| XF1 | Fuseholder (ALL) | HRK 00-005 | .50 |
| M1* | Meter, volts, D.C., 0-5 vdc (LM-E3 thru LM-E4P5) | EBN 50-003 | 14.40 |

PARTS FOR "MP" OPTION (Cont)

MODELS MP-5, P-5 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| M1* | Meter, volts, D.C., 0-8 vdc (LM-E5, LM-E6, E0-7) | EBN 80-005 | $ 12.00 |
| M1* | Meter, volts, D.C., 0-10 vdc (LM-E8) | EBP 10-016 | 18.00 |
| M1* | Meter, volts, D.C., 0-15 vdc (LM-E10, LM-E12, E0-14) | EBP 15-017 | 18.00 |
| M1* | Meter, volts, D.C., 0-20 vdc (LM-E15, LM-E18) | EBP 20-014 | 18.00 |
| M1* | Meter, volts, D.C., 0-25 vdc (LM-E20) | EBP 25-018 | 18.00 |
| M1* | Meter, volts, D.C., 0-40 vdc (LM-E24, E28, E36, E0-32) | EBP 40-013 | 18.00 |
| M1* | Meter, volts, D.C., 0-60 vdc (LM-E48, E0-60) | EBP 60-015 | 18.00 |
| M1* | Meter, volts, D.C., 0-80 vdc (LM-E60) | EBP 80-019 | 18.00 |
| M1* | Meter, volts, D.C., 0-120 vdc (LM-E100) | EBR 12-075 | 18.00 |
| M1* | Meter, volts, D.C., 0-150 vdc (LM-E120) | EBR 15-076 | 18.00 |
| M1* | Meter, volts, D.C, 0-200 vdc (LM-E150) | EBR 20-077 | 18.00 |
| M2* | Meter, amperes, D.C. 0-20 amperes LM-E3 thru LM-E10 | EDP 20-015 | 18.00 |
| M2* | Meter, amperes, D.C, 0-1.5 amperes LM-E150 | EDN-15-020 | 18.00 |
| M2* | Meter, amperes, D.C, 0-2 amperes LM-E100, 120 | EDN 20-022 | 18.00 |
| M2* | Meter, amperes, D.C, 0-15 amperes LM-E12 thru E-24, E-0-7 | EDP 15-014 | 18.00 |
| M2* | Meter, amperes, D.C., 0-10 amperes LM-E28 E36, E0-14 | EDP 10-013 | 18.00 |
| M2* | Meter, amperes, D.C., 0-3 amperes LME-0-60 | EDN 30-019 | 18.00 |
| M2* | Meter, amperes, D.C. 0-6 amperes LM-E48 | EDN 60-018 | 18.00 |
| M2* | Meter, amperes, D.C. 0-5 amperes LM-E60, LME-0-32 | EDN 50-021 | 18.00 |
| R1 | Res., var., ww, 300 ohms ±5%, 5w LM-E3 | DNR 30-018 | 1.95 |
| R1 | Res., var., ww, 600 ohms ±5%, 5w LM-E3P3 thru LM-E6 | DNR-60-026 | 2.50 |
| R1 | Res., var., ww, 1,000 ohms ±5%, 5w LM-E8 | DNS 10-032 | 1.95 |
| R1 | Res., var., ww, 2,200 ohms ±5%, 5w LM-E10 thru LM-E28 LME-0-7 | DNS-22-053 | 2.50 |
| R1 | Res., var., ww, 3,300 ohms ±5%, 5w LM-E36, LM-E48, LME-0-14 | DNS-33-054 | 2.50 |
| R1 | Res., var., ww, 13,000 ohms ±5%, 5w LME-0-60 | DNT-13-031 | 2.50 |
| R1 | Res., var., ww, 4,500 ohms ±5%, 5w LM-E60 | DNS-45-059 | 2.50 |
| R1 | Res., var., ww, 9,000 ohms 5%, 5w LM-E100 LM-E150, LME-0-32 | DNS-90-051 | 2.50 |

*This part only used on MP-5

PARTS FOR "MP" OPTION (Cont)

MODELS MP-5, P-5 (Cont)

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| S1 | Switch, SPST ALL | FDA 11-017 | $ 2.50 |
| C1, C2 | Cap., Tant., 2.5 mfd -15 + 75%, 100 vdc. ALL | CBN-25-010 | 1.80 |

PARTS FOR "MP" OPTION WITH "R" OPTION

Variable resistor R1 changes on all "P" and "MP" panels with suffix "R". Part no. changes for R1 are listed here.

| | | | |
|---|---|---|---|
| R1 | Res., var., ww, 300 ohms ±5%, 5w (LM-E3) | DNR-30-031 | 6.25 |
| R1 | Res., var., ww 600 ohms ±5%, 5w (LM-E3P3 thru LM-E6) | DNR-60-032 | 6.25 |
| R1 | Res., var., ww, 1,000 ohms ±5%, 5w (LM-E8) | DNS-10-069 | 6.25 |
| R1 | Res., var., ww, 2,200 ohms ±5%, 5w (LM-E10 thru LM-E28, LME-0-7) | DNS-22-070 | 6.25 |
| R1 | Res., var., ww, 3,300 ohms ±5%, 5w (LM-E36, LM-E48, LME-0-14) | DNS-33-071 | 6.25 |
| R1 | Res., var., ww, 4,500 ohms ±5%, 5w (LM-E60) | DNS-45-072 | 6.25 |
| R1 | Res., var., ww, 9,000 ohms ±5%, 5w (LM-E100 thru LM-E150, LME-0-32) | DNS-90-068 | 6.25 |
| R1 | Res., var., ww. 13,000 ohms ±5%, 5w (LME-0-60) | DNS-13-035 | 6.35 |

PARTS FOR "OV" OPTION

MODELS LMOV-1, -2, -3

COMMON PARTS

| | | | |
|---|---|---|---|
| C1 | Cap., mylar, 0.01 mfd ±20%, 80 vdc | CGL-10-008 | .50 |
| Q1 | Transistor, NPN | FBN-L102 | 2.40 |
| R3 | Res., film, 200 ohms ±5%, 1/2w | DCR-20-010 | .20 |
| R4 | Res., thermistor, 425 ohms ±5%, 1-1/4w | DKR-43-004 | 1.52 |
| R5 | Res., comp., 1,200 ohms ±10%, 1/2w | DEB-1221 | .12 |
| R6 | Same as R5 | | |
| R8 | Res., comp., 15,000 ohms ±10%, 1/2w | DEB-1531 | .12 |
| R10 | Same as R5 | | |
| SCR1 | Rectifier, silicon, controlled | FBP-00-009 | 6.00 |

UNIQUE PARTS

MODEL LMOV-1

| | | | |
|---|---|---|---|
| Q2 | Transistor, PNP | FBN-L103 | 1.76 |
| R1 | Res., var., ww, 2,000 ohms ±10%. 1w | DNS-20-034 | 3.00 |
| R2 | Res., film, 560 ohms ±2%, 1/2w | DCR-56-002 | .65 |
| R7 | Res., comp., 33 ohms ±5%, 1/4w | DCB-3305 | .15 |
| R9 | Not used | | |

| CIRC. DESIG. | DESCRIPTION | LAMBDA NO. | UNIT PRICE |
|---|---|---|---|
| | **MODEL LMOV-2** | | |
| Q2 | Transistor, PNP | FBN-L103 | 1.76 |
| R1 | Res., var., ww, 5,000 ohms ±10%, 1w | DNS-50-036 | 3.15 |
| R2 | Res., film, 1,470 ohms ±1%, 1/2w | DCS-15-031 | .30 |
| R7 | Res., comp., 33 ohms ±5%, 1/4w | DCB-3305 | .15 |
| R9 | Not used | | |
| | **MODEL LMOV-3** | | |
| Q2 | Transistor, PNP | FBN-L114 | 3.50 |
| R1 | Res., var., ww, 20,000 ohms ±10%, 1w | DNT-20-010 | 3.25 |
| R2 | Res., film, 4,700 ohms ±2%, 1/2w | DCS-47-028 | .30 |
| R7 | Res., comp., 39 ohms ±5%, 1/4w | DCB-3905 | .15 |
| R9 | Res., comp., 22 ohms ±10%, 1/2w | DEB-2201 | .12 |
| | **PARTS FOR "Y" OPTION** | | |
| C107 | Cap., elect., 40 mfd 35 vdc | CBP-40-014 | $ 1.68 |
| CR1 | Rectifier, zener diode | FBM-Z107 | 3.75 |
| CR101 | Rectifier, zener diode | FBM-Z104 | 4.35 |
| Q101 | Transistor NPN | FBN-L109 | 2.75 |
| R4 | Res., comp., 220,000 ±10%, 1/2w | DEB-2241 | .12 |
| R101 | Res., film, 6,800 ohms ±2%, 1/4w | DCS-68-032 | .30 |
| R102 | Res., film, 220 ohms ±2%, 1/4w | DCR-22-014 | .30 |

**PARTS FOR "T" OPTION**

On all "E" package models with suffix "T", capacitor C1, fuse F1, and transformer T1 change and a resistor is added in series with DS-1 on "MP" option. Part no. changes for C1, F1, and DS-1 Res are listed here. For transformer T1 used on these models, see standard "E" model parts list for the standard transformer part no. and add suffix "T" to the part no. Price for T1 does not change.

| | | | |
|---|---|---|---|
| | **ALL MODELS** | | |
| C1 | Cap., mylar, 0.033 mfd ±10%, 600 vdc | CGL-33-014 | .35 |
| DS1-Res. | Res., comp., 120K ±10% | DEB-1241 | .12 |
| | **MODELS LM-0-7, 0-14, 0-32, 0-60 LM-E3 THRU LM-E6** | | |
| F1 | Fuse, "Slo-Blo", 3.0 amps, 250V, 3AB | FFG-03-000 | .25 |
| | **MODELS LM-E8, E10** | | |
| F1 | Fuse, "Slo-Blo", 4.0 amps, 250V, 3AB | FFG-04-000 | .25 |
| | **MODELS LM-E12, E15 LM-E60 THRU LM-E150** | | |
| F1 | Fuse, "Slo-Blo", 5.0 amps, 250V | FFG-05-000 | .25 |
| | **MODELS LME18 THRU LME48** | | |
| F1 | Fuse, "Slo-Blo", 6.25 amperes 250V | FFG-06-250 | .25 |

**PARTS FOR "V" OPTION**

All "E" package models with the "V" option have the same part changes as listed for the "T" option except for capacitor C1 and transformer T1 listed below

| | | | |
|---|---|---|---|
| C1 | Cap., paper, 0.01 mfd ±10%, 1000 vdc | CAL-10-021 | 1.95 |
| T1 | Transformer | Add "G*" suffix to Reg. T1 No. | Same as Reg. T1 |

* Suffix "V" on units with serial no. prefixes A & B.

**PARTS FOR "R" OPTION**

Variable resistor R1 and transformer T1 change on all "E" package models with suffix "R". Part no. changes for R1 are listed here. For transformer T1 used on these models see standard "E" model parts lists for the standard transformer part no. and add suffix "R" to the part no. Price for T1 does not change.

| | | | |
|---|---|---|---|
| | **MODEL LM-E3** | | |
| R1 | Res., var., ww, 300 ohms ±5%, 5w | DNR-30-029 | $ 6.25 |
| | **MODELS LM-E3P3—LM-E6** | | |
| R1 | Res., var., ww, 600 ohms ±5%, 5w | DNR-60-030 | 6.25 |
| | **MODEL LM-E8** | | |
| R1 | Res., var., ww, 1000 ohms ±5%, 5w | DNS-10-064 | 6.25 |
| | **MODELS LM-E10—LM-E28, LME-0-7** | | |
| R1 | Res., var., ww, 2200 ohms ±5%, 5w | DNS-22-065 | 6.25 |
| | **MODELS LM-E36, LM-E48, LME-0-14** | | |
| R1 | Res., var., ww, 3300 ohms ±5%, 5w | DNS-33-066 | 6.25 |
| | **MODEL LM-E60** | | |
| R1 | Res., var., ww, 4500 ohms ±5%, 5w | DNS-45-067 | 6.25 |
| | **MODELS LM-E100—LM-E150, LME-0-32** | | |
| R1 | Res., var., ww, 9000 ohms ±5%, 5w | DNS-90-068 | 6.25 |
| | **MODEL LME-0-60** | | |
| R1 | Res., var., ww, 13000 ohms ±5%, 5w | DNT-13-035 | 6.25 |

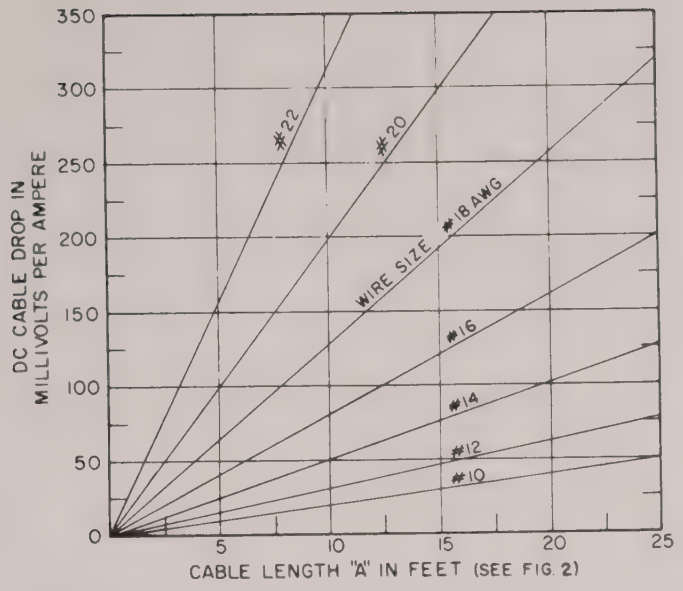



Figure 1. Cable Connection Chart

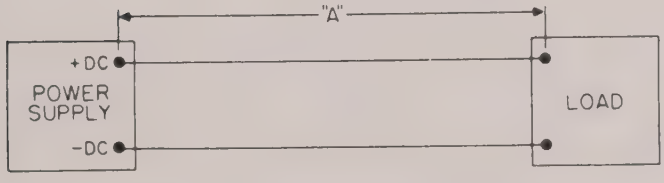
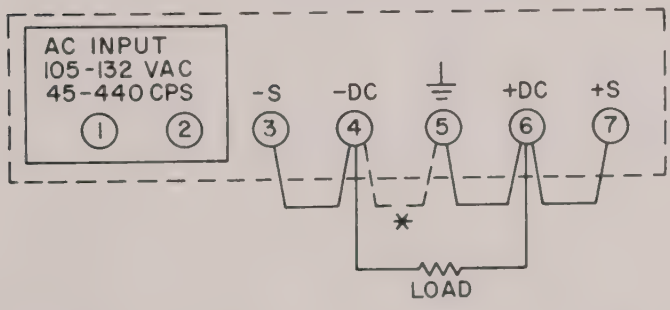
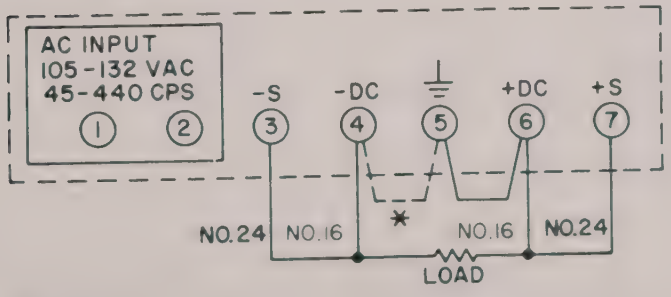



Figure 2. Cable Length "A" in Feet




NOTE:
* FOR NEGATIVE GROUND, DISCONNECT JUMPER FROM TERMINALS 5 AND 6 AND RECONNECT TO TERMINALS 4 AND 5.

Figure 3. Local Sensing Connections




NOTE:
* FOR NEGATIVE GROUND, DISCONNECT JUMPER FROM TERMINALS 5 AND 6 AND RECONNECT TO TERMINALS 4 AND 5.

Figure 4. Remote Sensing Connections

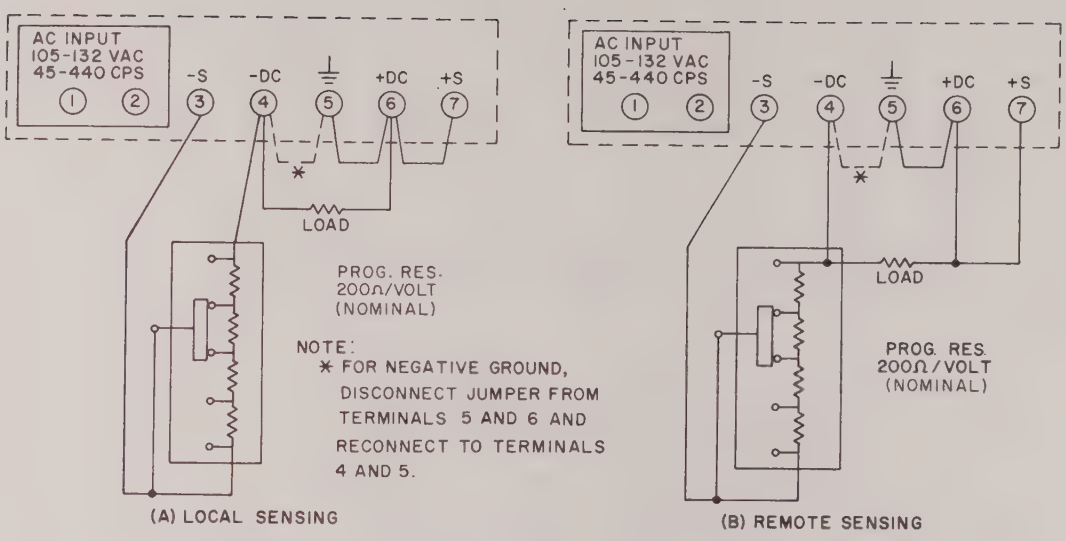



Figure 5. Programmed Voltage, with External Resistor

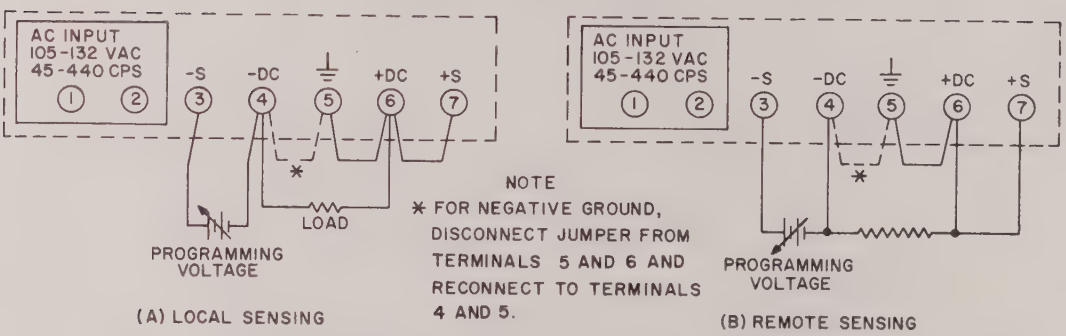



Figure 6. Programmed Voltage, with External Programming Voltage Source

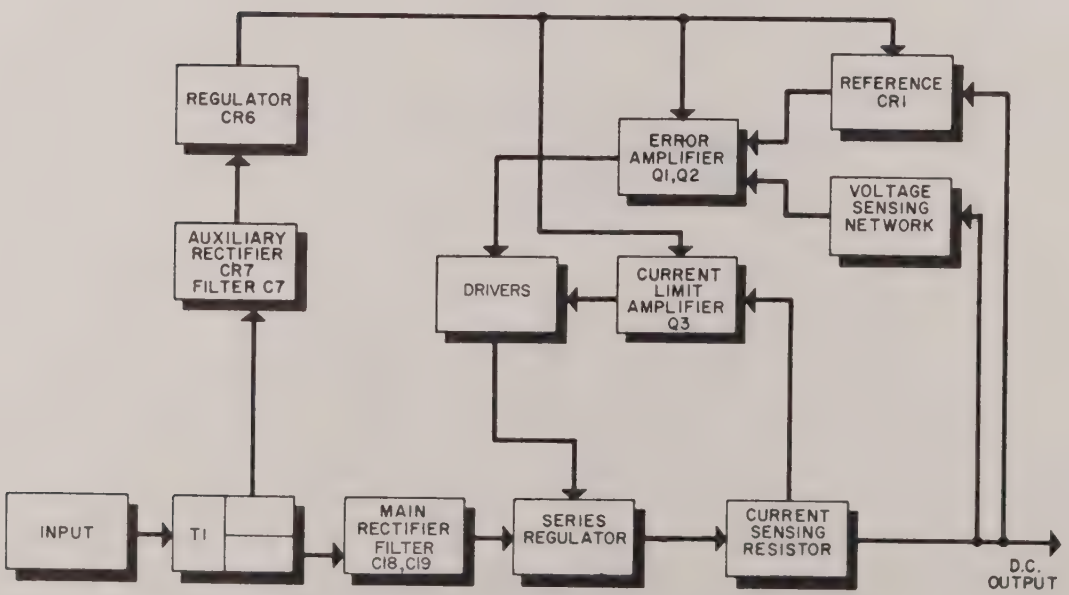



Figure 7. Typical Block Diagram

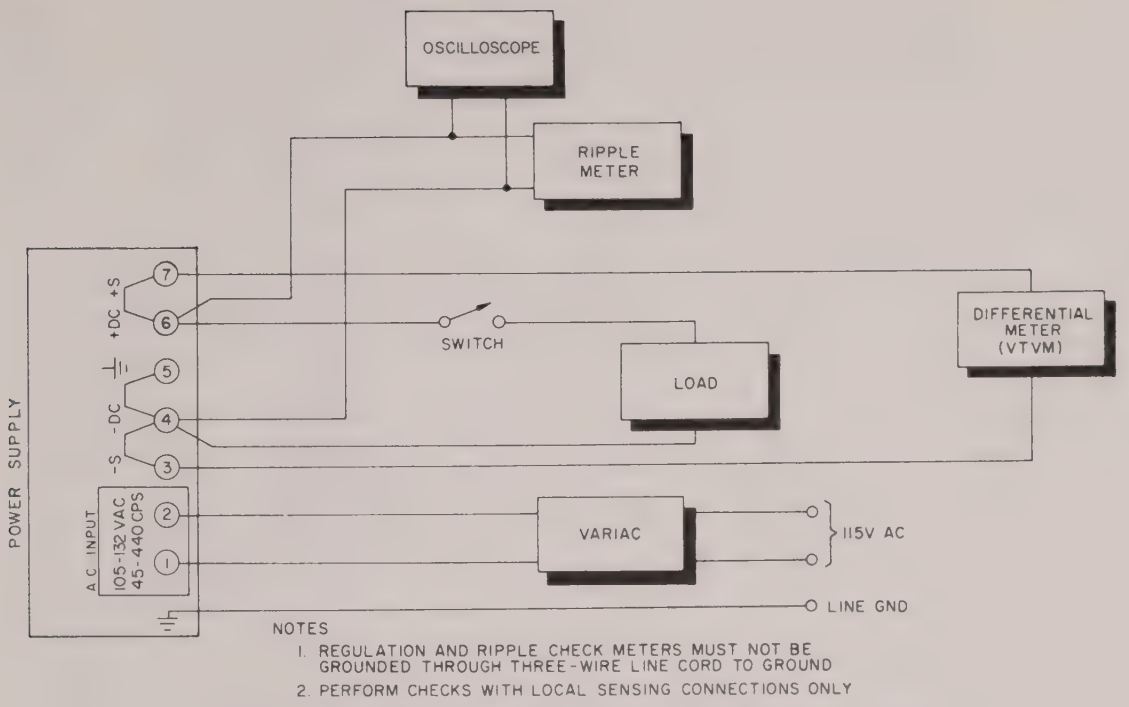



Figure 8. Test Connections for Performance Checks

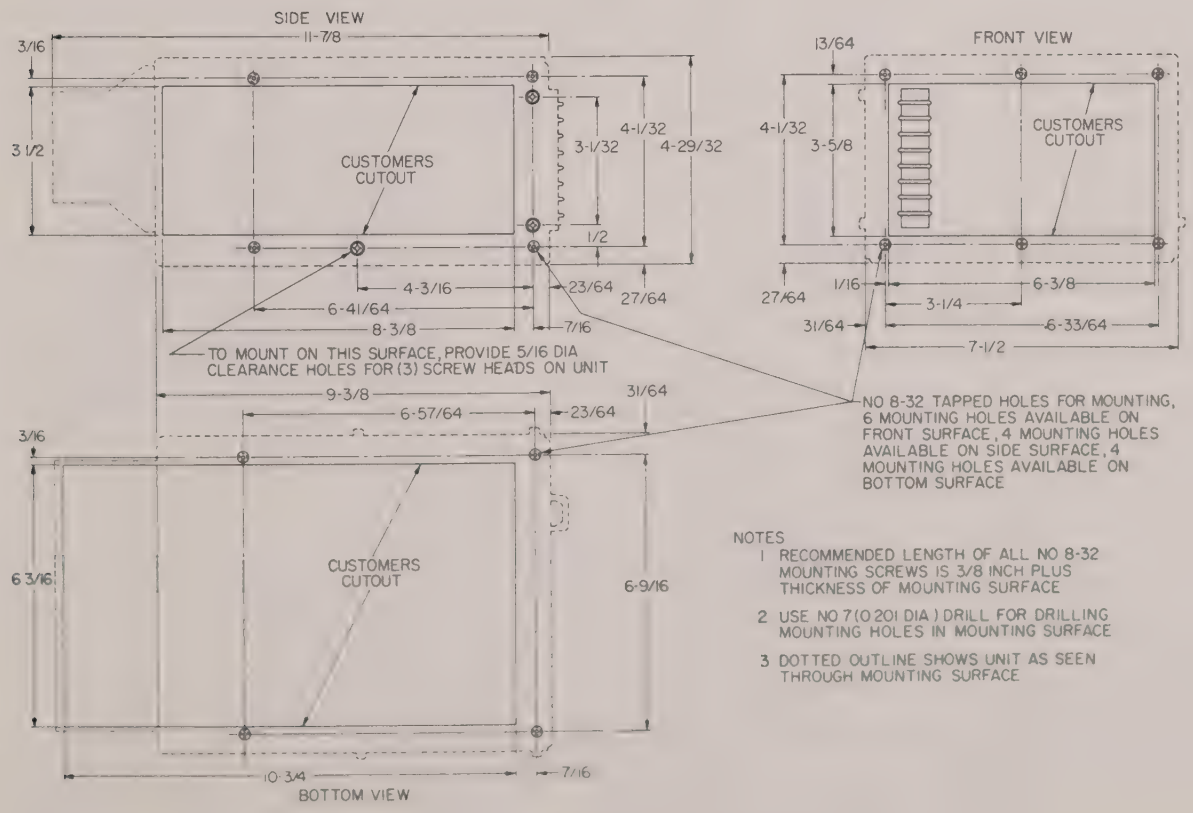
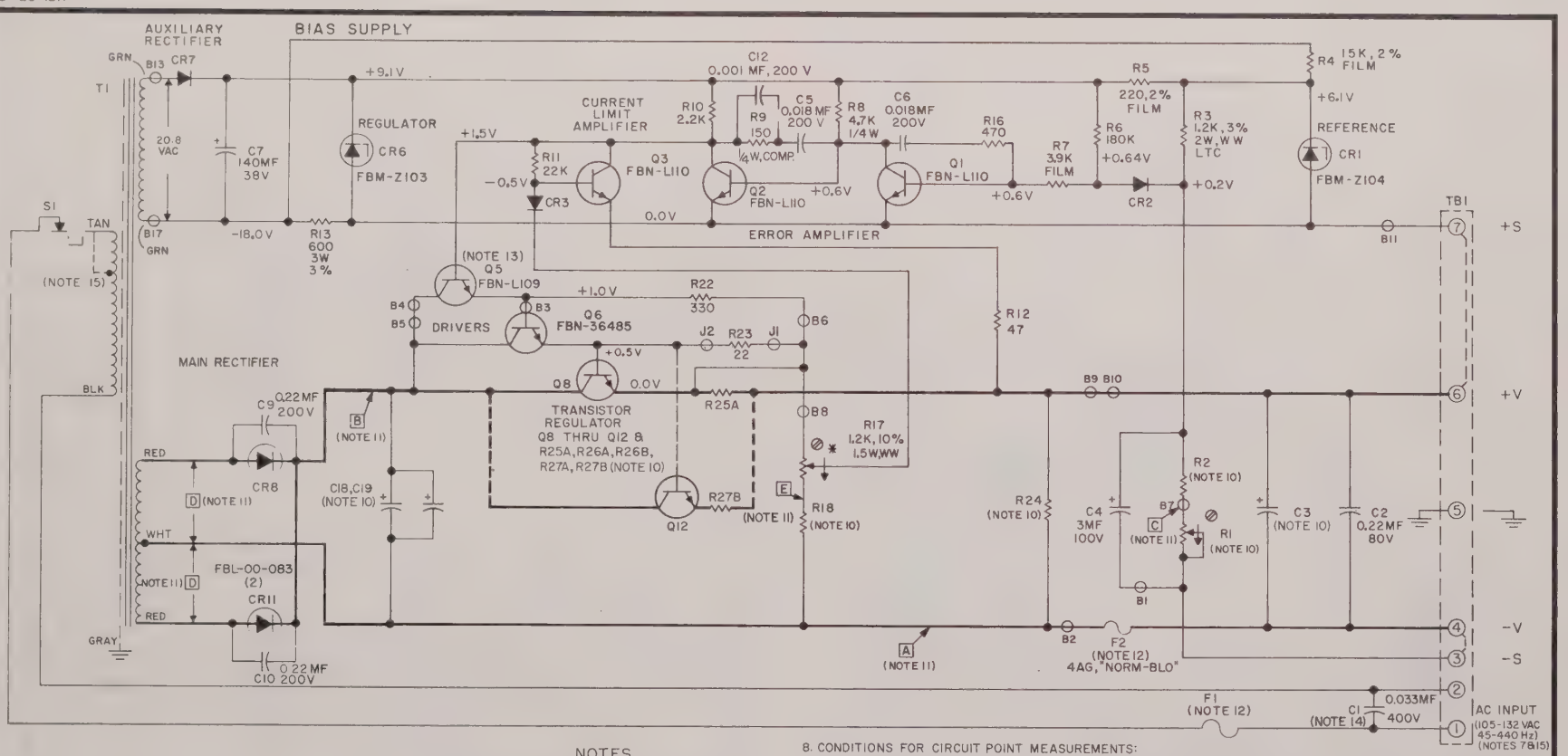

SIDE VIEW
FRONT VIEW
BOTTOM VIEW
CUSTOMERS CUTOUT
TO MOUNT ON THIS SURFACE, PROVIDE 5/16 DIA CLEARANCE HOLES FOR (3) SCREW HEADS ON UNIT
NO 8-32 TAPPED HOLES FOR MOUNTING, 6 MOUNTING HOLES AVAILABLE ON FRONT SURFACE, 4 MOUNTING HOLES AVAILABLE ON SIDE SURFACE, 4 MOUNTING HOLES AVAILABLE ON BOTTOM SURFACE
NOTES
1 RECOMMENDED LENGTH OF ALL NO 8-32 MOUNTING SCREWS IS 3/8 INCH PLUS THICKNESS OF MOUNTING SURFACE
2 USE NO 7 (0.201 DIA.) DRILL FOR DRILLING MOUNTING HOLES IN MOUNTING SURFACE
3 DOTTED OUTLINE SHOWS UNIT AS SEEN THROUGH MOUNTING SURFACE

Figure 9. Recommended Mounting Cutouts

SCB-E3-12A




## NOTES

1. RESISTOR VALUES ARE IN OHMS.
2. RESISTOR WATTAGE 1/2 WATT; RESISTORS ABOVE 2 WATTS ARE WIREWOUND UNLESS OTHERWISE NOTED.
3. RESISTOR TOLERANCES: COMP. ±10%; WIREWOUND ±5%; FILM ±5%; UNLESS OTHERWISE NOTED.
4. CAPACITOR TOLERANCES: ELECTROLYTIC −10%, +100%; MYLAR ±10%; UNLESS OTHERWISE NOTED.
5. SYMBOLS:
   - ↻ INDICATES CLOCKWISE ROTATION OF SHAFT.
   - ⊘ INDICATES ADJUSTMENT OR CALIBRATION CONTROL.
   - ⏚ INDICATES CONNECTION TO CHASSIS.
   - ▭ INDICATES ACTUAL UNIT MARKING
   - ✳ SEE INSTRUCTION MANUAL.
   - ▶| LAMBDA PT. #FBL-00-030; USE IN 4002 DIODE FOR REPLACEMENT UNLESS OTHERWISE NOTED.
   - ⊸ INDICATES TERMINAL ON PRINTED WIRING BOARD "B" OR TERMINAL BOARD "J".
6. DESIGNATIONS ARE LAMBDA PART NUMBERS.
7. DELETE 40°C CURRENT RATING FOR 45-55 Hz; FOR 360-440 Hz, SEE INSTRUCTION MANUAL.
8. CONDITIONS FOR CIRCUIT POINT MEASUREMENTS: INPUT: 115 VAC, 60 Hz ; OUTPUT: NOM'L. VDC NO LOAD. INDICATED VOLTAGES ARE TYPICAL VALUES AND ARE DC UNLESS OTHERWISE NOTED. DC MEASUREMENTS TAKEN WITH 20,000 OHMS/V VOLTMETER BETWEEN +S (TERM. 7) & INDICATED POINTS UNLESS NOTED.
9. COAT BOTH SIDES OF INSULATING WAFER WITH DOW CORNING NO. 340 SILICONE GREASE.
10. SEE TABLE I FOR COMPONENT VALUES.
11. SEE TABLE I FOR VOLTAGE VALUES
12. SEE TABLE I FOR FUSE RATINGS.
13. IF Q5 IS REPLACED, ALWAYS RETAIN RADIATOR AND INSTALL WITH NEW TRANSISTOR.
14. ON UNITS WITH "V" OPTION, C1 IS 0.01MF ±10%, 1000V, PAPER.
15. ON UNITS WITH "V" OPTION, T1 HAS TAPPED PRIMARY. "V" OPTION UNITS CAN BE WIRED FOR 187-242V INPUT (USING TAP), OR FOR 205-265V INPUT (USING ENTIRE PRIMARY). ON SERIAL NO. PREFIXES A & B, "V" OPTION UNITS; T1 PRIMARY IS NOT TAPPED. AC INPUT IS 205-265V.

| REFERENCE DESIGNATIONS NOT USED | |
|---|---|
| Q4 | |
| Q7 | CR10 |
| C8 | R14 |
| C11 | R15 |
| C13-C17 | R19 |
| | R20 |
| CR4, 5 | R21 |

| MODELS | MODELS |
|---|---|
| | LM-E5 |
| LM-E3 | LM-E6 |
| LM-E3P3 | LM-E8 |
| LM-E3P6 | |
| LM-E4 | LM-E10 |
| LM-E4P5 | LM-E12 |

FOR WIRING OF POWER SUPPLY TO LOAD REFER TO SUPPLY-TO-LOAD WIRING DIAGRAMS.

DOTTED CONNECTIONS SHOWN ON TB1 INDICATE JUMPERS IN PLACE FOR LOCAL SENSING CONNECTION.

THIS SCHEMATIC APPLIES TO UNITS BEARING SERIAL NO. PREFIXES A-C

# SCHEMATIC DIAGRAM
## REGULATED POWER SUPPLY

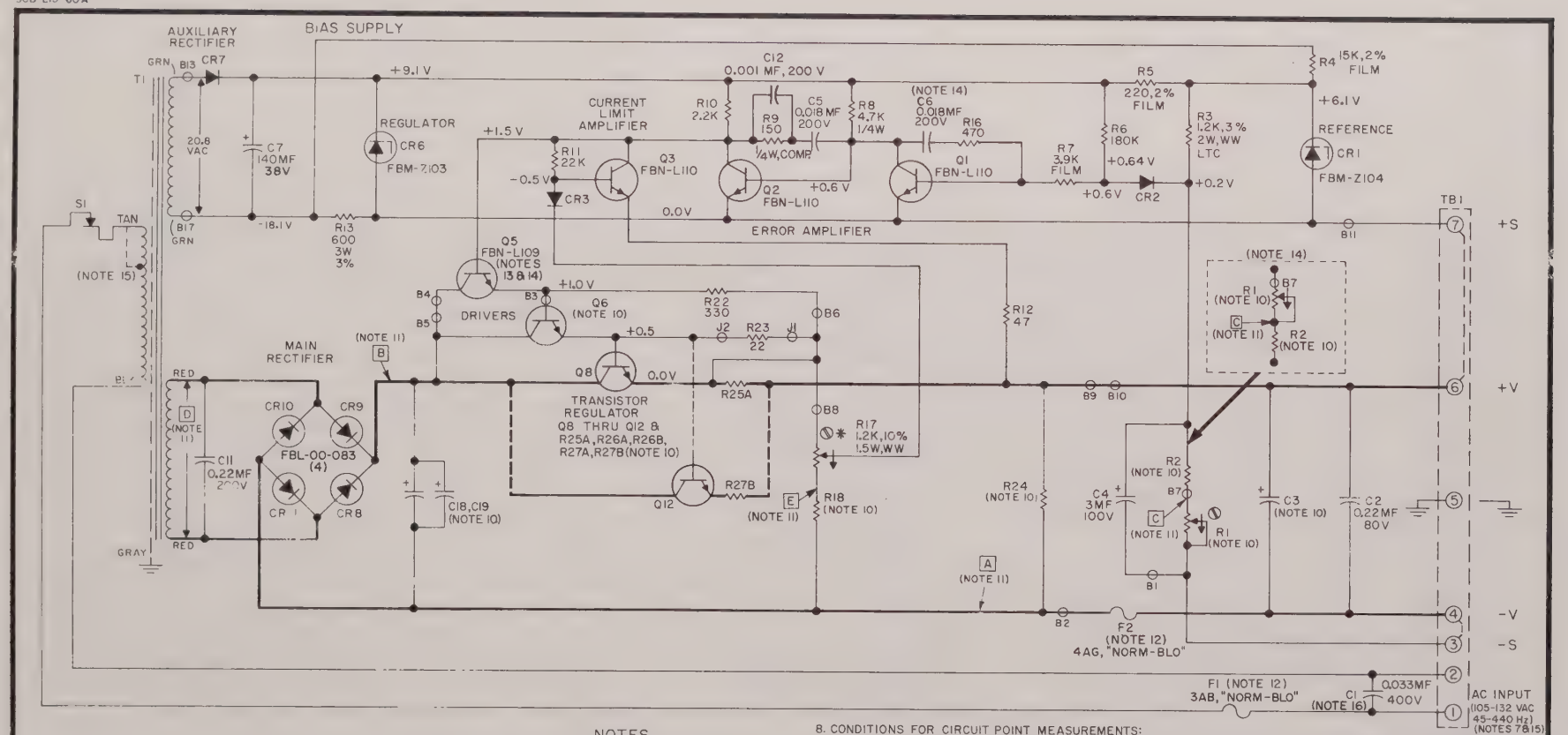
LAMBDA ELECTRONICS CORP.
MELVILLE NEW YORK

TABLE I

DATA REFERENCES FOR MODELS LM-E3 – LM-E12

| Model | Voltage Range (VDC) | Max. Current (Amps) | | | | Schematic Voltage Measurement | | | | | Schematic Components | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40°C | 50°C | 60°C | 71°C | A (VDC) | B (VDC) | C (VDC) | D (VAC) | E (VDC) | C3 | C18, C19 | Q8-Q12 (FBN-) | R1 ±5% 5W | R2 ±3% 3W | R18 ±5% 1/2W | R24 ±10% | R25A, R26A, R27A R26B, R27B | F1* (AMPS) | F2 (AMPS) |
| LM-E3 | 3±5% | 22.0 | 20.0 | 16.5 | 10.0 | -3.0 | +6.2 | -2.0 | 7.2 | -3.0 | 3600MF, 20V 35V SURGE | 25000MF, 20V 30V SURGE | 36972 | 300 | 430 | JUMPER | 330 1W | 0.10±5%, 11W | 5, 3AG, SLO-BLO (3, 3AB) | 40 |
| LM-E3P3 | 3.3±5% | 21.0 | 19.0 | 16.5 | 10.0 | -3.3 | +7.3 | -2.2 | 8.2 | -3.3 | 3600MF, 20V 35V SURGE | 25000MF, 20V 30V SURGE | 36972 | 600 | 430 | JUMPER | 680 2W | 0.10±5%, 11W | 5, 3AG, SLO-BLO (3, 3AB) | 40 |
| LM-E3P6 | 3.6±5% | 21.0 | 19.0 | 16.5 | 10.0 | -3.6 | +7.0 | -2.2 | 8.2 | -3.6 | 3600MF, 20V 35V SURGE | 25000MF, 20V 30V SURGE | 36972 | 600 | 430 | JUMPER | 680 2W | 0.10±5%, 11W | 5, 3AG, SLO-BLO (3, 3AB) | 40 |
| LM-E4 | 4±5% | 21.0 | 19.0 | 16.5 | 10.0 | -4.0 | +6.6 | -3.0 | 8.2 | -4.0 | 3600MF, 20V 35V SURGE | 25000MF, 20V 30V SURGE | 36972 | 600 | 600 | JUMPER | 680 2W | 0.10±5%, 11W | 5, 3AG, SLO-BLO (3, 3AB) | 40 |
| LM-E4P5 | 4.5±5% | 20.0 | 18.0 | 16.4 | 10.0 | -4.5 | +7.6 | -2.8 | 9.3 | -3.4 | 3600MF, 20V 35V SURGE | 25000MF, 20V 30V SURGE | 36972 | 600 | 650 | 390 | 680 2W | 0.10±5%, 11W | 7, 3AG, SLO-BLO (3, 3AB) | 40 |
| LM-E5 | 5±5% | 20.0 | 18.0 | 16.4 | 10.0 | -5.0 | +7.1 | -2.8 | 9.3 | -2.4 | 3600MF, 20V 35V SURGE | 25000MF, 20V 30V SURGE | 36972 | 600 | 650 | 1300 | 680 2W | 0.10±5%, 11W | 7, 3AG, SLO-BLO (3, 3AB) | 40 |
| LM-E6 | 6±5% | 19.0 | 17.3 | 15.6 | 10.0 | -6.0 | +7.5 | -3.8 | 10.2 | -2.9 | 3600MF, 20V 35V SURGE | 25000MF, 20V 30V SURGE | 36972 | 600 | 800 2W | 1300 | 680 2W | 0.10±5%, 11W | 7, 3AG, SLO-BLO (3, 3AB) | 40 |
| LM-E8 | 8±5% | 18.0 | 16.4 | 14.7 | 10.0 | -8.0 | +9.9 | -5.8 | 13.4 | -2.7 | 3600MF, 20V 35V SURGE | 25000MF, 20V 30V SURGE | 36485 | 1000 | 1200 2W | 2400 | 1500 2W | 0.18±5%, 11W | 8, 3AB, NORM-BLO (4,SLO-BLO) | 40 |
| LM-E10 | 10±5% | 16.0 | 14.5 | 13.0 | 9.5 | -10.0 | +10.8 | -5.8 | 15.4 | -3.3 | 2100MF, 35V 60V SURGE | 14000MF, 35V 60V SURGE | 36485 | 2200 | 1200 2W | 2400 | 1500 2W | 0.30±5%, 11W | 8, 3AB, NORM-BLO (4,SLO-BLO) | 30 |
| LM-E12 | 12±5% | 15.0 | 13.6 | 12.3 | 9.5 | -12.0 | +10.2 | -8.8 | 16.4 | -4.0 | 2100MF, 35V 60V SURGE | 14000MF, 35V 60V SURGE | 36485 | 2200 | 1800 | 2400 | 1500 2W | 0.30±5%, 11W | 8, 3AB, NORM-BLO (5,SLO-BLO) | 30 |

* Fuse ratings in parenthesis apply to units with "V" option.




## NOTES

1. RESISTOR VALUES ARE IN OHMS.
2. RESISTOR WATTAGE 1/2 WATT; RESISTORS ABOVE 2 WATTS ARE WIREWOUND UNLESS OTHERWISE NOTED.
3. RESISTOR TOLERANCES: COMP. ±10%; WIREWOUND ±5%; FILM ±5%; UNLESS OTHERWISE NOTED.
4. CAPACITOR TOLERANCES: ELECTROLYTIC -10%,+100%; MYLAR ±10%; UNLESS OTHERWISE NOTED.
5. SYMBOLS:
   - ↟ INDICATES CLOCKWISE ROTATION OF SHAFT.
   - ⊘ INDICATES ADJUSTMENT OR CALIBRATION CONTROL.
   - ⏚ INDICATES CONNECTION TO CHASSIS.
   - ▭ INDICATES ACTUAL UNIT MARKING
   - ✱ SEE INSTRUCTION MANUAL.
   - ⊣▶ LAMBDA PT. #FBL-00-030; USE IN 4002 DIODE FOR REPLACEMENT UNLESS OTHERWISE NOTED.
   - ⊸ INDICATES TERMINAL ON PRINTED WIRING BOARD "B" OR TERMINAL BOARD "J".
6. DESIGNATIONS ARE LAMBDA PART NUMBERS.
7. DELETE 40°C CURRENT RATING FOR 45-55 Hz; FOR 360-440Hz, SEE INSTRUCTION MANUAL.
8. CONDITIONS FOR CIRCUIT POINT MEASUREMENTS: INPUT: 115 VAC, 60 Hz; OUTPUT: NOM'L VDC, NO LOAD INDICATED VOLTAGES ARE TYPICAL VALUES AND ARE DC UNLESS OTHERWISE NOTED. DC MEASUREMENTS TAKEN WITH 20,000 OHMS/V VOLTMETER BETWEEN +S (TERM. 7) & INDICATED POINTS UNLESS NOTED.
9. COAT BOTH SIDES OF INSULATING WAFER WITH DOW CORNING NO. 340 SILICONE GREASE.
10. SEE TABLE I FOR COMPONENT VALUES.
11. SEE TABLE I FOR VOLTAGE VALUES.
12. SEE TABLE I FOR FUSE RATING.
13. IF Q5 IS REPLACED, ALWAYS RETAIN RADIATOR AND INSTALL WITH NEW TRANSISTOR.
14. ON MODEL LM-E60, C6 IS 0.0068 MF, Q5 IS FBN-L108, R1 AND R2 ARE CONNECTED AS SHOWN.
15. ON UNITS WITH "V" OPTION, T1 HAS TAPPED PRIM. "V" OPTION UNITS CAN BE WIRED FOR 187-242V INPUT (USING TAP), OR FOR 205-265V INPUT (USING ENTIRE PRIMARY). ON SERIAL NO. PREFIXES A & B, "V" OPTION UNITS; T1 PRIMARY IS NOT TAPPED. AC INPUT IS 205-265V.
16. ON UNITS WITH "V" OPTION, C1 IS 0.01MF ±10%, 1000V, PAPER.

| REFERENCE DESIGNATIONS NOT USED | |
|---|---|
| Q7 | R14 |
| Q4 | R15 |
| CR4 | R19-R21 |
| CR5 | |
| C8-C10 | |
| C13-C17 | |

| MODELS |
|---|
| LM-E15 |
| LM-E18 |
| LM-F20 |
| LM-E24 |
| LM-E28 |
| LM-E36 |
| LM-E48 |
| LM-E60 |

FOR WIRING OF POWER SUPPLY TO LOAD REFER TO SUPPLY-TO-LOAD WIRING DIAGRAMS.

DOTTED CONNECTIONS SHOWN ON TB1 INDICATE JUMPERS IN PLACE FOR LOCAL SENSING CONNECTION.

THIS SCHEMATIC APPLIES TO UNITS BEARING SERIAL NO. PREFIXES A-C

# SCHEMATIC DIAGRAM
## REGULATED POWER SUPPLY

LAMBDA ELECTRONICS CORP.
MELVILLE NEW YORK

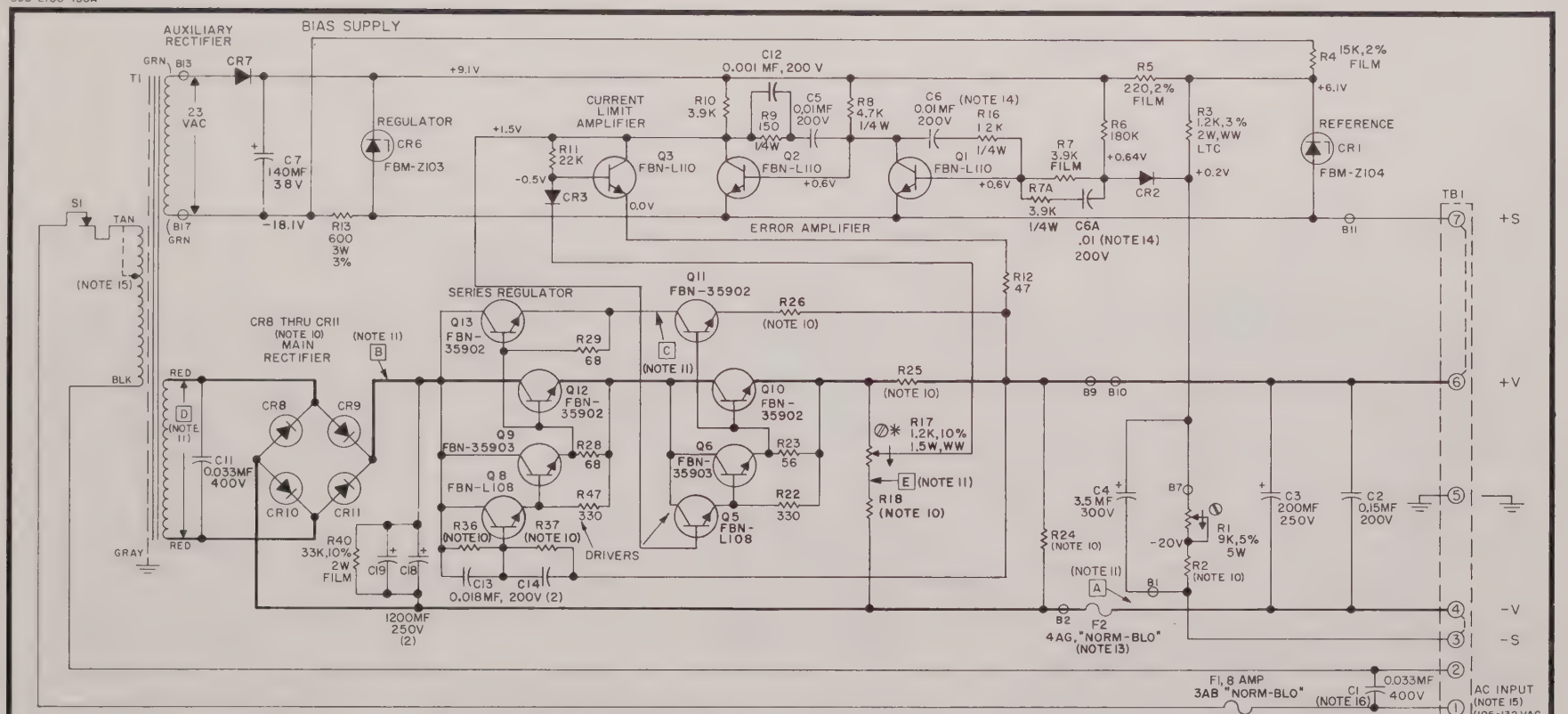
TABLE I

DATA REFERENCES FOR MODELS LM-E15 – LM-E60

| Model | Voltage Range (VDC) | Max. Current (Amps) | | | | Schematic Voltage Measurement | | | | | Schematic Components | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40°C | 50°C | 60°C | 71°C | A (VDC) | B (VDC) | C (VDC) | D (VAC) | E (VDC) | C3 | C18, C19 | Q6 (FBN-) | Q8-Q12 (FBN-) | R1 ±5% 5W | R2 ±3% 3W | R18 ±5% 1/2W | R24 ±10% 2W | R25A, R26A, R27A R26B, R27B | F1† (Amps) | F2 (Amps) |
| LM-E15 | 15±5% | 14.0 | 12.7 | 11.5 | 8.6 | -15.0 | +12.0 | -9.0 | 20.5 | -5.0 | 2100MF, 35V 60V SURGE | 14000MF, 35V 60V SURGE | 36485 | 36485 | 2200 | 1800 | 2400 | 2200 | 0.47±5%, 8W | 10 (5, SLO-BLO) | 30 |
| LM-E18 | 18±5% | 13.0 | 11.8 | 10.6 | 8.6 | -18.0 | +13.4 | -12.5 | 23.6 | -2.7 | 2100MF, 35V 60V SURGE | 14000MF, 35V 60V SURGE | 36220 | 36220 | 2200 | 2500 | 6800 | 2200 | 0.47±5%, 8W | 10 (6.25, SLO-BLO) | 30 |
| LM-E20 | 20±5% | 12.0 | 10.9 | 9.8 | 8.5 | -20.0 | +14.2 | -12.5 | 25.6 | -3.0 | 1100MF, 60V 100V SURGE | 7800MF, 60V 100V SURGE | 36220 | 36220 | 2200 | 2500 | 6800 | 3300 | 0.75±5%, 8W | 10 (6.25, SLO-BLO) | 30 |
| LM-E24 | 24±5% | 11.0 | 10.0 | 9.0 | 7.6 | -24.0 | +16.1 | -18.0 | 30.0 | -3.6 | 1100MF, 60V 100V SURGE | 7800MF, 60V 100V SURGE | 36220 | 36220 | 2200 | 3600 | 6800 | 3300 | 0.75±5%, 8W | 10 (6.25, SLO-BLO) | 30 |
| LM-E28 | 28±5% | 10.0 | 9.0 | 8.0 | 7.1 | -28.0 | +16.4 | -22.5 | 32.5 | -4.2 | 1100MF, 60V 100V SURGE | 7800MF, 60V 100V SURGE | 36220 | 36220 | 2200 | 4500 | 6800 | 3300 | 0.75±5%, 8W | 10 (6.25, SLO-BLO) | 30 |
| LM-E36 | 36±5% | 8.0 | 7.3 | 6.5 | 5.7 | -36.0 | +20.0 | -28.0 | 41.0 | -3.9 | 1100MF, 60V 100V SURGE | 7800MF, 60V 100V SURGE | 36487 | 36487 | 3300 | 5600 | 10,000 | 3300 | 1.5±5%, 8W | 10 (6.25, SLO-BLO) | 30 |
| LM-E48 | 48±5% | 6.0 | 5.4 | 4.9 | 4.3 | -48.0 | +25.5 | -40.0 | 53.4 | -5.2 | *1100MF, 60V 100V SURGE | 3000MF, 100V 150V SURGE | 35902 or 36487 | 35902 or 36487 | 3300 | 8000 | 10,000 | 4700 | 1.5±5%, 8W | 10 (6.25, SLO-BLO) | 30 |
| LM-E60 | 60±5% | 3.5 | 3.3 | 3.0 | 2.6 | -60.0 | +27.5 | -50.0 | 63.0 | -4.5 | 400MF, 100V 150V SURGE | 3000MF, 100V 150V SURGE | 35902 | 35902 | 4500 | 10000 5W | 15,000 2% | 5600 | 1.5±5%, 8W | 8 (5, SLO-BLO) | 30 |

*C3 WAS 400MF, 100V ON LM-E48

† Fuse ratings in parenthesis apply to units with "V" option.




## NOTES

1. RESISTOR VALUES ARE IN OHMS
2. RESISTOR WATTAGE 1/2 WATT; RESISTORS ABOVE 2 WATTS ARE WIREWOUND UNLESS OTHERWISE NOTED.
3. RESISTOR TOLERANCES: COMP. ±10%; WIREWOUND ±5%; FILM ±5%; UNLESS OTHERWISE NOTED.
4. CAPACITOR TOLERANCES: ELECTROLYTIC -10%,+100%; MYLAR ±10%; UNLESS OTHERWISE NOTED.
5. SYMBOLS:
   - ↓ INDICATES CLOCKWISE ROTATION OF SHAFT.
   - ⊘ INDICATES ADJUSTMENT OR CALIBRATION CONTROL.
   - ⏚ INDICATES CONNECTION TO CHASSIS.
   - ▭ INDICATES ACTUAL UNIT MARKING
   - * SEE INSTRUCTION MANUAL.
   - ▶| LAMBDA PT. #FBL-00-030; USE IN4002 DIODE FOR REPLACEMENT UNLESS OTHERWISE NOTED.
   - ⊸ INDICATES TERMINAL ON PRINTED WIRING BOARD "B"
6. DESIGNATIONS ARE LAMBDA PART NUMBERS
7. DELETE 40°C CURRENT RATING FOR 45-55 Hz; FOR 360-440 Hz, SEE INSTRUCTION MANUAL.
8. CONDITIONS FOR CIRCUIT POINT MEASUREMENTS: INPUT: 115 VAC, 60 Hz; OUTPUT: NOM'L VDC, NO LOAD INDICATED VOLTAGES ARE TYPICAL VALUES AND ARE DC UNLESS OTHERWISE NOTED. DC MEASUREMENTS TAKEN WITH 20,000 OHMS/V VOLTMETER BETWEEN +S (TERM. 7) & INDICATED POINTS UNLESS NOTED.
9. COAT BOTH SIDES OF INSULATING MICA WITH DOW CORNING NO. 340 SILICONE GREASE.
10. SEE TABLE I FOR COMPONENT VALUES.
11. SEE TABLE I FOR VOLTAGE VALUES.
12. IF Q5 OR Q8 IS REPLACED, ALWAYS RETAIN RADIATOR AND INSTALL WITH NEW TRANSISTOR.
13. SEE TABLE I FOR FUSE RATING.
14. R16 WAS 1/2W AND R7A, C6A NOT USED ON UNITS WITH SERIAL NO. PREFIX A.
15. ON UNITS WITH "V" OPTION, T1 HAS TAPPED PRIMARY. "V" OPTION UNITS CAN BE WIRED FOR 187-242V INPUT (USING TAP), OR FOR 205-265V INPUT (USING ENTIRE PRIMARY). ON SERIAL NO. PREFIXES A & B, "V" OPTION UNITS; T1 PRIMARY IS NOT TAPPED. AC INPUT IS 205-265V.
16. ON UNITS WITH "V" OPTION, C1 IS 0.01MF ±10%, 1000V, PAPER, F1 IS 5A, 3AB

| REFERENCE DESIGNATIONS NOT USED | |
|---|---|
| Q7 | R14 |
| Q4 | R15 |
| CR4 | R19-R21 |
| CR5 | R30-35 |
| | R38-39 |
| C8-C10 | R41-46 |
| C15-C17 | R27 |

FOR WIRING OF POWER SUPPLY TO LOAD REFER TO SUPPLY-TO-LOAD WIRING DIAGRAMS.

DOTTED CONNECTIONS SHOWN ON TB1 INDICATE JUMPERS IN PLACE FOR LOCAL SENSING CONNECTION.

THIS SCHEMATIC APPLIES TO UNITS BEARING SERIAL NO. PREFIXES A-C

| MODELS |
|---|
| LM-E100 |
| LM-E120 |
| LM-E150 |
| |
| |
| |

# SCHEMATIC DIAGRAM
## REGULATED POWER SUPPLY

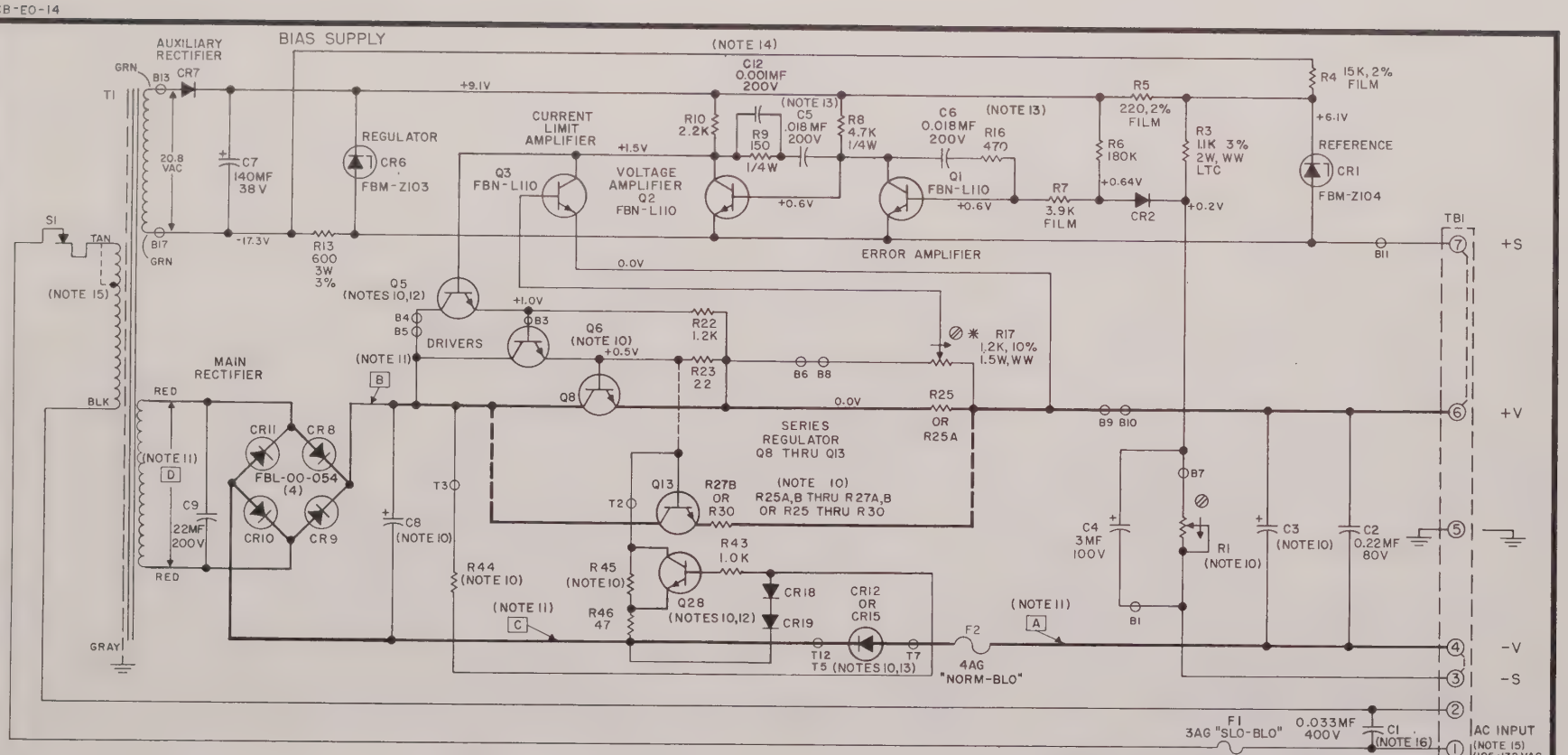
LAMBDA ELECTRONICS CORP.
MELVILLE NEW YORK
A Veeco SUBSIDIARY

TABLE I

DATA REFERENCES FOR MODELS LM-E100, LM-E120 AND LM-E150

| Model | Range (VDC) | Max. Current (Amperes) | | | | Schematic Voltage Measurement | | | | | Schematic Components | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40°C | 50°C | 60°C | 71°C | A (VDC) | B (VDC) | C (VDC) | D (VAC) | E (VDC) | CR8-11 (FBL00-) | R2 ±3% 5W | R18 ±5% | R24 ±10% 2W | R25, R26 ±3%, 3W | R36, R37 ±3% | F2 |
| LM-E100 | 100±5% | 2.0 | 1.7 | 1.6 | 1.5 | -100 | +49.0 | +23 | 107 | -3.0 | 065 | 16K | 39K 1/2W | 22K | 1.0. | 8K 3W | 5A |
| LM-E120 | 120±5% | 1.7 | 1.5 | 1.4 | 1.2 | -120 | +56.5 | +27 | 125 | -3.1 | 065 | 20K | 43K 1/2W | 22K | 1.5 | 8K 3W | 5A |
| LM-E150 | 150±5% | 1.4 | 1.3 | 1.2 | 1.0 | -150 | +69.5 | +33 | 156 | -3.2 | 066 | 26K | 56K 1W | 27K | 1.5 | 10K 5W | 3A |

SCB-EO-14




## NOTES

1. RESISTOR VALUES ARE IN OHMS.
2. RESISTOR WATTAGE 1/2 WATT; RESISTORS ABOVE 2 WATTS ARE WIREWOUND UNLESS OTHERWISE NOTED.
3. RESISTOR TOLERANCES: COMP. ±10%; WIREWOUND ±5%; FILM ±5%; UNLESS OTHERWISE NOTED.
4. CAPACITOR TOLERANCES: ELECTROLYTIC -10%,+100%; MYLAR ±10%; UNLESS OTHERWISE NOTED.
5. SYMBOLS:
   - INDICATES CLOCKWISE ROTATION OF SHAFT.
   - INDICATES ADJUSTMENT OR CALIBRATION CONTROL.
   - INDICATES CONNECTION TO CHASSIS.
   - INDICATES ACTUAL UNIT MARKING
   - SEE INSTRUCTION MANUAL.
   - LAMBDA PT. #FBL-00-030; USE IN4002 DIODE FOR REPLACEMENT UNLESS OTHERWISE NOTED.
   - INDICATES TERMINAL ON PRINTED WIRING BOARD 'B', BOARD "T"
6. DESIGNATIONS ARE LAMBDA PART NUMBERS.
7. DELETE 40°C CURRENT RATING FOR 45-55 Hz, FOR 360-440 Hz, SEE INSTRUCTION MANUAL.
8. CONDITIONS FOR CIRCUIT POINT MEASUREMENTS: INPUT: 115VAC, 60Hz; OUTPUT: NOM'L VDC, NO LOAD INDICATED VOLTAGES ARE TYPICAL VALUES AND ARE DC UNLESS OTHERWISE NOTED. DC MEASUREMENTS TAKEN WITH 20,000 OHMS/V VOLTMETER BETWEEN +S (TERM. 7) & INDICATED POINTS UNLESS NOTED.
9. COAT BOTH SIDES OF INSULATING WAFER WITH DOW CORNING NO. 340 SILICONE GREASE.
10. SEE TABLE I FOR COMPONENT VALUES.
11. SEE TABLE I FOR VOLTAGE VALUES
12. IF Q5 AND/OR Q28 IS REPLACED RETAIN RADIATOR AND INSTALL WITH NEW TRANSISTOR.
13. CR15 AND TERMINAL POINT ⊖ T7 ONLY USED ON MODEL LME-0-60; C5 IS .01MF; R16 IS 820 OHMS.
14. C12 ONLY USED ON MODEL LME-0-14
15. ON UNITS WITH "V" OPTION, T1 HAS TAPPED PRIM. "V" OPTION UNITS CAN BE WIRED FOR 187-242V INPUT (USING TAP), OR FOR 205-265V INPUT (USING ENTIRE PRIMARY). ON SERIAL NO. PREFIXES A & B, "V" OPTION UNITS; T1 PRIMARY IS NOT TAPPED. AC INPUT IS 205-265V.
16. ON UNITS WITH "V" OPTION, C1 IS 0.01MF ±10%, 1000V, PAPER.

| REFERENCE DESIGNATIONS NOT USED | |
|---|---|
| Q4 | R15,R18 |
| Q7 | R21,R24 |
| CR3,4,5 | R31-42 |
| CR13,14 | R19,20 |
| Q14-27 | CR16,17 |
| R2,R11 | C10,11 |
| R12,R14 | |

| MODELS |
|---|
| LME-0-14 |
| LME-0-32 |
| LME-0-60 |

FOR WIRING OF POWER SUPPLY TO LOAD REFER TO SUPPLY-TO-LOAD WIRING DIAGRAMS.

DOTTED CONNECTIONS SHOWN ON TBI INDICATE JUMPERS IN PLACE FOR LOCAL SENSING CONNECTION.

THIS SCHEMATIC APPLIES TO UNITS BEARING SERIAL NO. PREFIXES A-C

# SCHEMATIC DIAGRAM
## REGULATED POWER SUPPLY

LAMBDA ELECTRONICS CORP. MELVILLE NEW YORK

A Veeco SUBSIDIARY

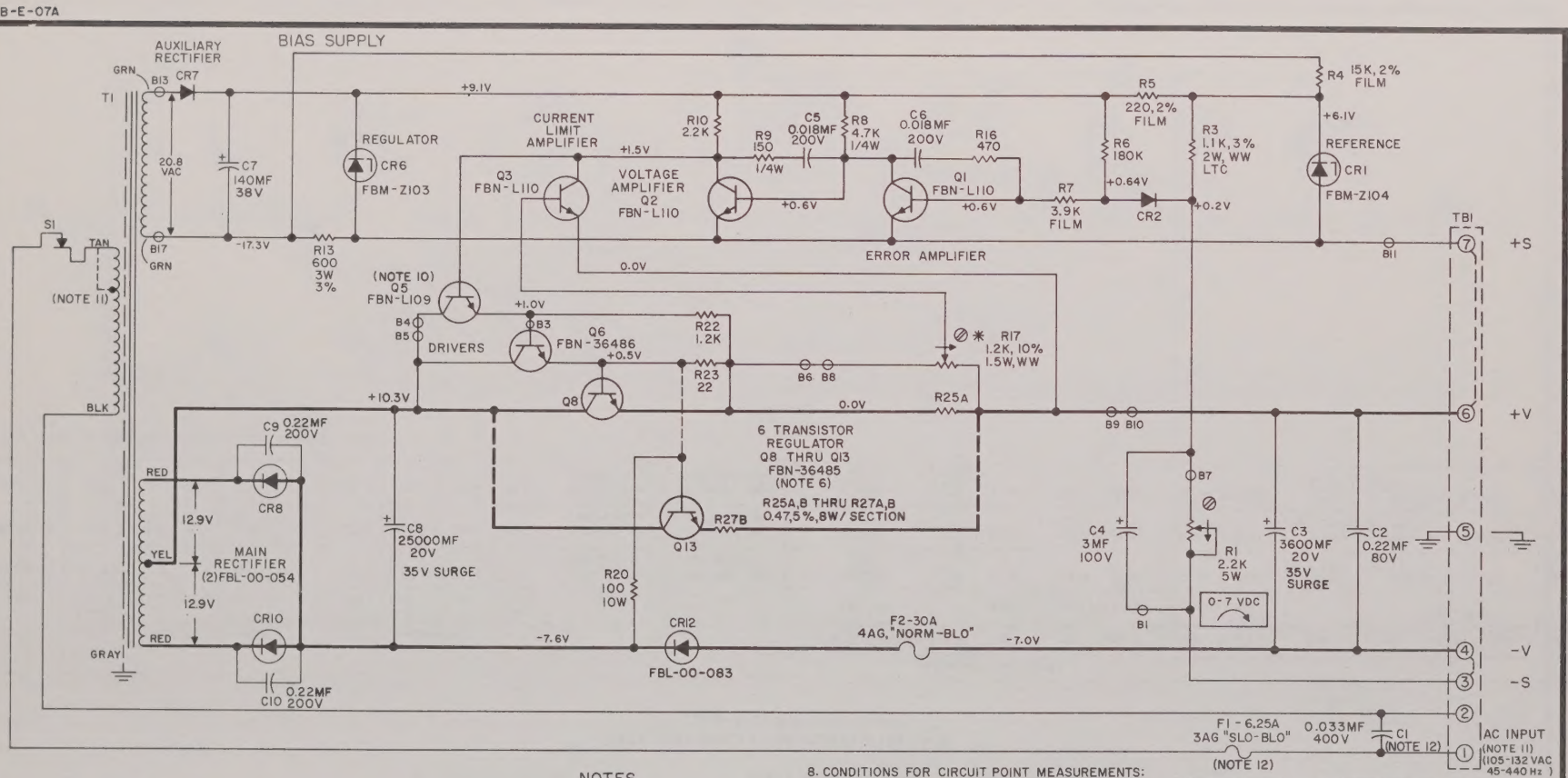
TABLE I

DATA REFERENCES FOR MODELS LME-0-14
LME-0-32 AND LME-0-60

| Model | Voltage Range (VDC) | Max. Current (Amps) | | | | Schematic Voltage Measurement | | | | Schematic Components | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 40°C | 50°C | 60°C | 71°C | A (VDC) | B (VDC) | C (VDC) | D (VAC) | C3 | C8 | CR12(CR15) FBL-00- | F1* | Q5 (FBN-) | Q6 (FBN-) | Q8-13 (FBN-) | Q28 (FBN-) | R1 5% 5W | R44 | R45 | R25A,B,R26 A,B, R27A,B or R25 - R30 | F2 |
| LME-0-14 | 0-14 | 7.4 | 6.4 | 5.2 | 4.1 | -14.0 | +12.6 | -14.5 | 19.9 | 2100MF, 35V 60V SURGE | 14000MF, 35V 60V SURGE | (CR12) 083 | 10A (3A, 3AB) | L109 | 36486 | 36485 | L148 | 3300 | 2200 10%,1/2W | 820 10%,1W | 0.75, 5% 5W | 20A |
| LME-0-32 | 0-32 | 3.7 | 3.2 | 2.6 | 2.1 | -32.0 | +14.5 | -32.5 | 34.0 | 1100MF, 60V 100V SURGE | 7800MF, 60V 100V SURGE | (CR12) 083 | 10A (3A, 3AB) | L109 | 36488 | 36487 | L148 | 9000 | 4700 10%,2W | 2000 3%,3W | 3.0, 3%, 3W | 10A |
| LME-0-60 | 0-60 | 2.1 | 1.7 | 1.4 | 1.1 | -60.0 | +24.0 | -60.5 | 60.5 | 400MF, 100V 150V SURGE | 3000MF, 100V 150V SURGE | (CR15) 065 | 6.25A (3A, 3AB) | L108 | 35903 | 35902 | L108 | 13000 | 4500 3%,3W | 4500 3%,3W | 3.0, 3%, 3W | 5A |

* Fuse ratings in parenthesis apply to units with "V" option.

SCB-E-07A




## NOTES

1. RESISTOR VALUES ARE IN OHMS.
2. RESISTOR WATTAGE 1/2 WATT; RESISTORS ABOVE 2 WATTS ARE WIREWOUND UNLESS OTHERWISE NOTED.
3. RESISTOR TOLERANCES: COMP. ±10%; WIREWOUND ±5%; FILM ±5%; UNLESS OTHERWISE NOTED.
4. CAPACITOR TOLERANCES: ELECTROLYTIC -10%,+100%; MYLAR ±10%; UNLESS OTHERWISE NOTED.
5. SYMBOLS:
   - INDICATES CLOCKWISE ROTATION OF SHAFT.
   - INDICATES ADJUSTMENT OR CALIBRATION CONTROL.
   - INDICATES CONNECTION TO CHASSIS.
   - INDICATES ACTUAL UNIT MARKING
   - SEE INSTRUCTION MANUAL.
   - LAMBDA PT. #FBL-00-030; USE IN4002 DIODE FOR REPLACEMENT UNLESS OTHERWISE NOTED.
   - INDICATES TERMINAL ON PRINTED WIRING BOARD 'B'.
6. DESIGNATIONS ARE LAMBDA PART NUMBERS.
7. DELETE 40°C CURRENT RATING FOR 45-55 Hz; FOR 360-440 Hz, SEE INSTRUCTION MANUAL.
8. CONDITIONS FOR CIRCUIT POINT MEASUREMENTS: INPUT: 115VAC, 60 Hz, OUTPUT: 7 VDC, NO LOAD INDICATED VOLTAGES ARE TYPICAL VALUES AND ARE DC UNLESS OTHERWISE NOTED. DC MEASUREMENTS TAKEN WITH 20,000 OHMS/V VOLTMETER BETWEEN +S (TERM. 7) & INDICATED POINTS UNLESS NOTED.
9. COAT BOTH SIDES OF INSULATING WAFER WITH DOW CORNING NO. 340 SILICONE GREASE.
10. IF Q5 IS REPLACED, ALWAYS RETAIN RADIATOR AND INSTALL WITH NEW TRANSISTOR.
11. ON UNITS WITH "V" OPTION, T1 HAS TAPPED PRIM. "V" OPTION UNITS CAN BE WIRED FOR 187-242V INPUT (USING TAP), OR FOR 205-265V INPUT (USING ENTIRE PRIMARY). ON SERIAL NO. PREFIXES A & B, "V" OPTION UNITS; T1 PRIMARY IS NOT TAPPED. AC INPUT IS 205-265V.
12. ON UNITS WITH "V" OPTION, C1 IS 0.01MF±10%, 1000V, PAPER, F1 IS 3A, 3AB.

| REFERENCE DESIGNATIONS NOT USED | |
|---|---|
| Q4 | R15,R18 |
| Q7 | R21,R24 |
| CR3,4,5 | R19 |
| CR9 | |
| CR11 | |
| R2,R11 | |
| R12,R14 | |

| RATING TABLE | |
|---|---|
| AMB. TEMP. | MAX. LOAD |
| 40°C | 12.0 A |
| 50°C | 10.5 A |
| 60°C | 8.5 A |
| 71°C | 6.8 A |

(SEE NOTE 7)

FOR WIRING OF POWER SUPPLY TO LOAD REFER TO SUPPLY-TO-LOAD WIRING DIAGRAMS.

DOTTED CONNECTIONS SHOWN ON TB1 INDICATE JUMPERS IN PLACE FOR LOCAL SENSING CONNECTION.

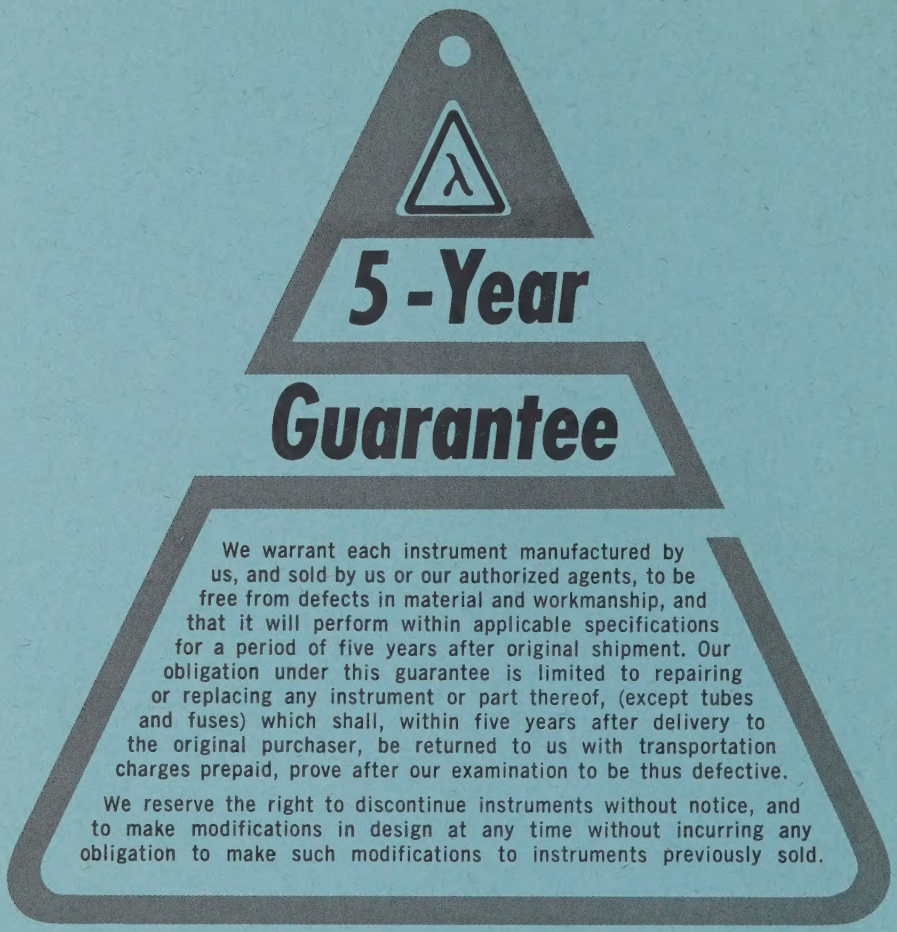
THIS SCHEMATIC APPLIES TO UNITS BEARING SERIAL NO. PREFIXES A-C

# SCHEMATIC DIAGRAM

REGULATED POWER SUPPLY

MODEL LME-0-7 0-7 VDC

LAMBDA ELECTRONICS CORP.
MELVILLE NEW YORK


5-Year
Guarantee
We warrant each instrument manufactured by us, and sold by us or our authorized agents, to be free from defects in material and workmanship, and that it will perform within applicable specifications for a period of five years after original shipment. Our obligation under this guarantee is limited to repairing or replacing any instrument or part thereof, (except tubes and fuses) which shall, within five years after delivery to the original purchaser, be returned to us with transportation charges prepaid, prove after our examination to be thus defective.
We reserve the right to discontinue instruments without notice, and to make modifications in design at any time without incurring any obligation to make such modifications to instruments previously sold.

LAMBDA ELECTRONICS CORP.
515 BROAD HOLLOW ROAD • MELVILLE, L. I., NEW YORK • 516 MYRTLE 4-4200

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